

Exhibit 23

1 IN THE UNITED STATES DISTRICT COURT
2 FOR THE SOUTHERN DISTRICT OF WEST VIRGINIA
3 * * * * * *
4 B.P.J., by her next friend and *
5 mother, HEATHER JACKSON, *
6 Plaintiffs * Case No.
7 vs. * 2:21-CV-00316
8 WEST VIRGINIA STATE BOARD OF *
9 EDUCATION, HARRISON COUNTY BOARD OF*
10 EDUCATION, WEST VIRGINIA SECONDARY *
11 SCHOOL ACTIVITIES COMMISSION, W. *
12 CLAYTON BURCH in his official *
13 capacity as State Superintendent, *
14 and DORA STUTLER in her official *
15 capacity as Harrison County *
16 Superintendent, PATRICK MORRISEY in*

17
18 VIDEOTAPED DEPOSITION OF
19 DEANNA ADKINS, M.D.
20 March 16, 2022

21
22 Any reproduction of this transcript
23 is prohibited without authorization
24 by the certifying agency.

1 his official capacity as Attorney *

2 General, and THE STATE OF WEST *

3 VIRGINIA, *

4 Defendants *

5 * * * * *

6

7 VIDEOTAPED DEPOSITION OF

8 DEANNA ADKINS, M.D.

9 March 16, 2022

10

11

12

13

14

15

16

17

18

19

20

21

22

23

24

1 DEPOSITION
2 OF
3 DEANNA ADKINS, M.D., taken on behalf of the Intervenor
4 herein, pursuant to the Rules of Civil Procedure, taken
5 before me, the undersigned, Lacey C. Scott a Court
6 Reporter and Notary Public in and for the Commonwealth
7 of Pennsylvania, taken via videoconference, on
8 Wednesday, March 16, 2022 at 9:06 a.m.

9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24

A P P E A R A N C E S

JOSHUA BLOCK, ESQUIRE

American Civil Liberties Union Foundation

125 Broad Street

New York, NY 10004

COUNSEL FOR PLAINTIFF

KATHLEEN R. HARTNETT, ESQUIRE

ANDREW BARR, ESQUIRE

JULIE VEROFF, ESQUIRE

ZOE HELSTROM, ESQUIRE

KATELYN KANG, ESQUIRE

ELIZABETH REINHARDT, ESQUIRE

Cooley, LLP

3 Embarcadero Center

20th Floor

San Francisco, CA 94111-4004

COUNSELS FOR PLAINTIFF

1 A P P E A R A N C E S (cont'd)

2

3 SRUTI SWAMINATHAN, ESQUIRE

4 TARA BORELLI, ESQUIRE

5 Lambda Legal

6 120 Wall Street

7 19th Floor

8 New York, NY 10005-3919

9 COUNSEL FOR PLAINTIFF

10

11 DAVID TRYON, ESQUIRE

12 State Capitol Complex

13 Building 1, Room E-26

14 Charleston, WV 25305

15 COUNSEL FOR STATE OF WEST VIRGINIA

16

17 ROBERTA F. GREEN, ESQUIRE

18 Shuman McCuskey Slicer, PLLC

19 1411 Virginia Street East

20 Suite 200

21 Charleston, WV 25301

22 COUNSEL FOR WEST VIRGINIA SECONDARY SCHOOL

23 ACTIVITIES COMMISSION

24

1 A P P E A R A N C E S (cont'd)

2

3 SUSAN DENIKER, ESQUIRE

4 Steptoe & Johnson

5 400 White Oaks Boulevard

6 Bridgeport, WV 26330

7 COUNSEL FOR HARRISON COUNTY BOARD OF EDUCATION and

8 HARRISON COUNTY SUPERINTENDENT DORA STUTLER

9

10 KELLY C. MORGAN, ESQUIRE

11 Bailey Wyant

12 500 Virginia Street East

13 Suite 600

14 Charleston, WV 25301

15 COUNSEL FOR WEST VIRGINIA BOARD OF EDUCATION and

16 SUPERINTENDANT W. CLAYTON BURCH

17

18 TIMOTHY D. DUCAR, ESQUIRE

19 Law Office of Timothy D. Ducar

20 7430 East Butherus Drive

21 Suite E

22 Scottsdale, AZ 85260

23 COUNSEL FOR INTERVENOR, LAINEY ARMISTEAD

24

1 A P P E A R A N C E S (cont'd)
2
3 ROGER BROOKS, ESQUIRE
4 LAURENCE WILKINSON, ESQUIRE
5 HAL FAMPTON, ESQUIRE
6 CHRISTIANA HOLCOMB, ESQUIRE
7 JOHNATHAN SCRUGGS, ESQUIRE
8 RACHEL CSUTOROS, ESQUIRE
9 Alliance Defending Freedom
10 15100 North 90th Street
11 Scottsdale, AZ 85260

12 COUNSEL FOR INTERVENOR, LAINEY ARMISTEAD
13
14
15
16
17
18
19
20
21
22
23
24

I N D E X

| | |
|-------------------------------------|-----------|
| DISCUSSION AMONG PARTIES | 14 - 17 |
| <u>WITNESS:</u> DEANNA ADKINS, M.D. | |
| EXAMINATION | |
| By Attorney Brooks | 17 - 300 |
| EXAMINATION | |
| By Attorney Tryonn | 301 - 322 |
| CERTIFICATE | 323 |

| | | | |
|----|---------------------|---------------------------------------|-------------------|
| 1 | <u>EXHIBIT PAGE</u> | | |
| 2 | | | |
| 3 | <u>PAGE</u> | | |
| 4 | <u>NUMBER</u> | <u>IDENTIFICATION</u> | <u>IDENTIFIED</u> |
| 5 | 1 | Report of Deanna Adkins, M.D. | 17 |
| 6 | 2 | Curriculum Vitae | 17 |
| 7 | 3 | Rebuttal Report | 18 |
| 8 | 4 | 2017 Endocrine Society Guidelines | 42 |
| 9 | 5 | 2009 Endocrine Society Guidelines | 48 |
| 10 | 6 | 2017 Lapinski Article | 58 |
| 11 | 7 | 2021 Endocrine Society Scientific | |
| 12 | | Statement | 65 |
| 13 | 8 | NIH Sex/Gender Infographic | 87 |
| 14 | 9 | World Health Organization Webpage | 96 |
| 15 | 10 | 1/10/22 Washington Post Article | 131 |
| 16 | 11 | 1/9/22 Out Sports Article | 142 |
| 17 | 12 | Duke Journal of Gender Law and Policy | |
| 18 | | Article | 148 |
| 19 | 13 | 2020 Hilton and Lundberg Article | 156 |
| 20 | 14 | 2016 Podcast Summary | 170 |
| 21 | 15 | 2016 Podcast Transcript | 170 |
| 22 | 16 | 2021 Washington Post Article | 213 |
| 23 | 17 | Anderson Interview | 216 |
| 24 | 18 | Declaration of Deanna Adkins, M.D. | 225 |

EXHIBIT PAGE

| | | | <u>PAGE</u> |
|---------------|--|--|-------------------|
| <u>NUMBER</u> | <u>IDENTIFICATION</u> | | <u>IDENTIFIED</u> |
| 19 | 2020 Herbert Health Publishing Article | | 228 |
| 20 | Turban, DeVries and Zucker Article | | 254 |
| 21 | NIMH Information Sheet | | 286 |

| | | | | | | | | | | | | | | | | |
|----|-----------------------|------|------|------|------|------|------|------|-------------|------|------|------|------|------|-----|--|
| 1 | <u>OBJECTION PAGE</u> | | | | | | | | | | | | | | | |
| 2 | | | | | | | | | | | | | | | | |
| 3 | <u>ATTORNEY</u> | | | | | | | | <u>PAGE</u> | | | | | | | |
| 4 | Borelli | 19, | 19, | 20, | 20, | 20, | 21, | 21, | 21, | 21, | 22, | | | | | |
| 5 | | 22, | 23, | 24, | 24, | 25, | 25, | 26, | 26, | 26, | 27, | 27, | 33, | 33, | 34, | |
| 6 | | 34, | 34, | 36, | 36, | 36, | 37, | 37, | 39, | 39, | 40, | 40, | 40, | 40, | 41, | |
| 7 | | 41, | 42, | 42, | 43, | 43, | 44, | 45, | 45, | 46, | 46, | 47, | 47, | 48, | 48, | |
| 8 | | 49, | 49, | 50, | 50, | 51, | 51, | 52, | 53, | 53, | 54, | 54, | 55, | 55, | 55, | |
| 9 | | 55, | 55, | 56, | 56, | 56, | 57, | 57, | 58, | 59, | 60, | 61, | 61, | 62, | 62, | |
| 10 | | 63, | 63, | 64, | 64, | 65, | 65, | 67, | 68, | 69, | 69, | 70, | 70, | 70, | 71, | |
| 11 | | 71, | 71, | 72, | 72, | 72, | 73, | 73, | 74, | 74, | 75, | 75, | 76, | 76, | 76, | |
| 12 | | 77, | 77, | 78, | 78, | 79, | 79, | 80, | 80, | 81, | 81, | 82, | 83, | 83, | 83, | |
| 13 | | 83, | 84, | 84, | 85, | 85, | 86, | 86, | 88, | 89, | 89, | 90, | 90, | 91, | 91, | |
| 14 | | 92, | 94, | 94, | 94, | 95, | 95, | 96, | 97, | 98, | 99, | 99, | 101, | 101, | | |
| 15 | | 102, | 102, | 103, | 103, | 104, | 105, | 106, | 107, | 107, | 107, | 107, | | | | |
| 16 | | 108, | 108, | 108, | 109, | 109, | 110, | 111, | 112, | 113, | 113, | 115, | | | | |
| 17 | | 116, | 116, | 117, | 117, | 118, | 118, | 118, | 119, | 119, | 119, | 120, | | | | |
| 18 | | 120, | 120, | 121, | 121, | 123, | 124, | 124, | 124, | 125, | 125, | 126, | | | | |
| 19 | | 127, | 127, | 127, | 127, | 129, | 129, | 131, | 132, | 132, | 133, | 133, | | | | |
| 20 | | 133, | 134, | 134, | 135, | 135, | 137, | 137, | 138, | 139, | 139, | 140, | | | | |
| 21 | | 140, | 141, | 141, | 141, | 142, | 143, | 144, | 144, | 145, | 145, | 146, | | | | |
| 22 | | 146, | 147, | 147, | 149, | 150, | 150, | 151, | 151, | 152, | 152, | 152, | | | | |
| 23 | | 153, | 153, | 154, | 154, | 155, | 155, | 155, | 156, | 158, | 159, | 159, | | | | |
| 24 | | 159, | 160, | 161, | 161, | 161, | 162, | 162, | 162, | 163, | 163, | 166, | | | | |

| | | | | | | | | | | | |
|----|-----------------------|------|------|------|------|------|------|------|------|------|-------------|
| 1 | <u>OBJECTION PAGE</u> | | | | | | | | | | |
| 2 | | | | | | | | | | | |
| 3 | <u>ATTORNEY</u> | | | | | | | | | | <u>PAGE</u> |
| 4 | Borelli | 166, | 167, | 167, | 168, | 168, | 169, | 170, | 171, | | |
| 5 | | 171, | 171, | 172, | 172, | 173, | 173, | 174, | 174, | 174, | 175, |
| 6 | | 175, | 175, | 176, | 177, | 177, | 178, | 178, | 179, | 180, | 180, |
| 7 | | 181, | 181, | 181, | 182, | 182, | 183, | 183, | 183, | 184, | 184, |
| 8 | | 186, | 187, | 187, | 187, | 188, | 188, | 189, | 189, | 190, | 190, |
| 9 | | 192, | 192, | 193, | 193, | 195, | 195, | 195, | 196, | 196, | 196, |
| 10 | | 196, | 197, | 197, | 198, | 198, | 200, | 200, | 201, | 203, | 204, |
| 11 | | 205, | 205, | 205, | 205, | 206, | 206, | 207, | 207, | 207, | 207, |
| 12 | | 208, | 209, | 209, | 209, | 210, | 210, | 211, | 211, | 211, | 212, |
| 13 | | 213, | 213, | 214, | 214, | 214, | 215, | 215, | 216, | 217, | 217, |
| 14 | | 219, | 219, | 220, | 220, | 222, | 222, | 222, | 223, | 223, | 224, |
| 15 | | 226, | 227, | 227, | 228, | 227, | 229, | 230, | 230, | 232, | 232, |
| 16 | | 233, | 233, | 234, | 235, | 235, | 235, | 236, | 236, | 237, | 237, |
| 17 | | 238, | 238, | 238, | 239, | 240, | 240, | 241, | 241, | 242, | 244, |
| 18 | | 245, | 245, | 246, | 246, | 246, | 247, | 247, | 248, | 248, | 251, |
| 19 | | 251, | 252, | 252, | 252, | 252, | 253, | 253, | 253, | 254, | 254, |
| 20 | | 257, | 258, | 258, | 258, | 259, | 259, | 260, | 260, | 261, | 261, |
| 21 | | 262, | 262, | 263, | 264, | 264, | 265, | 265, | 266, | 266, | 266, |
| 22 | | 267, | 267, | 267, | 268, | 268, | 269, | 269, | 270, | 270, | 271, |
| 23 | | 272, | 272, | 272, | 273, | 274, | 274, | 275, | 276, | 276, | 277, |
| 24 | | 277, | 278, | 278, | 279, | 280, | 280, | 280, | 281, | 281, | 284, |
| | | 285, | | | | | | | | | |

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15
- 16
- 17
- 18
- 19
- 20
- 21
- 22
- 23
- 24

PAGE

| | | | | | | | | | | | |
|---------|------|------|------|------|------|------|------|------|------|------|------|
| Borelli | 285, | 286, | 287, | 287, | 288, | 288, | 289, | 289, | | | |
| | 289, | 290, | 290, | 290, | 291, | 292, | 292, | 293, | 294, | 294, | 295, |
| | 295, | 296, | 297, | 298, | 298, | 299, | 299, | 300, | 302, | 303, | 303, |
| | 304, | 304, | 304, | 305, | 305, | 305, | 306, | 306, | 306, | 307, | 307, |
| | 307, | 308, | 308, | 308, | 309, | 309, | 309, | 310, | 310, | 310, | 311, |
| | 311, | 311, | 311, | 312, | 312, | 313, | 313, | 314, | 314, | 315, | 315, |
| | 316, | 316, | 317, | 318, | 318, | 320, | 320, | 320, | 321, | 321, | 321 |

S T I P U L A T I O N

(It is hereby stipulated and agreed by and between
counsel for the respective parties that reading,
signing, sealing, certification and filing are not not
waived.)

P R O C E E D I N G S

VIDEOGRAPHER: Good morning. We're now
on the record. My name is Jacob Stock. I'm a Certified
Legal Video Specialist employed by Sargent's Court
Reporting Services. Today's date is March 16th, 2022
and the current time is 9:06 a.m. Eastern Standard Time.
This video is being taken place remotely by video
conference. The caption of this case is in the United
States District Court for the Southern District of West
Virginia, Charleston Division, B.P.J., et al. V. West
Virginia State Board of Education, et al. Civil Action
Number 2:21-CV-00316. The name of the witness is Deanna
Adkins. Will the attorney present state their names and
the parties they represent for the record?

ATTORNEY BROOKS: Roger Brooks taking the
deposition with Alliance Defending Freedom and

1 representing the intervenor.

2 ATTORNEY HOLCUMB: Christina Holcumb for
3 intervenor.

4 ATTORNEY DUCAR: Timothy Ducar for
5 intervenor.

6 ATTORNEY CSUTOROS: Rachel Csutoros for
7 intervenor.

8 ATTORNEY TRYON: David Tryon at the
9 Attorney General's Office in West Virginia, and I
10 represent the State of West Virginia.

11 ATTORNEY MORGAN: Kelly Morgan with
12 Bailey and Wyant on behalf of West Virginia Board of
13 Education and Superintendent Burch.

14 ATTORNEY DENIKER: Good morning,
15 everyone. Susan Deniker representing Defendant Harrison
16 County Board of Education and Superintendent Doris
17 Stutler.

18 ATTORNEY GREEN: Roberta Green, Shuman
19 McCuskey Slicer. I'm here on behalf of West Virginia
20 Secondary School Activities Commission.

21 ATTORNEY BORELLI: And this is Tara
22 Borelli with Lambda Legal on behalf of the Plaintiff,
23 B.P.J..

24 ATTORNEY SWAMINATHAN: This is Sruti

1 Swaminathan also from Lambda Legal also on behalf of
2 Plaintiff.

3 ATTORNEY HARTNETT: And this is Kathleen
4 Hartnett from Cooley on behalf of the Plaintiff.

5 ATTORNEY BARR: Andrew Barr, also from
6 Cooley on behalf of the Plaintiff.

7 ATTORNEY REINHARDT: This is Elizabeth
8 Reinhardt, also with Cooley, also for Plaintiff.

9 ATTORNEY BLOCK: Josh Block from ACLU on
10 behalf of Plaintiff.

11 VIDEOGRAPHER: If that is everybody, then
12 can I ask the notary to swear in the witness?

13 ---

14 DEANNA ADKINS, M.D.,
15 CALLED AS A WITNESS IN THE FOLLOWING PROCEEDING, AND
16 HAVING FIRST BEEN DULY SWORN, TESTIFIED AND SAID AS
17 FOLLOWS:

18 ---

19 VIDEOGRAPHER: And at this time the
20 notary may be dismissed and we can begin.

21 ATTORNEY BROOKS: Thank you, ma'am.

22 NOTARY:

23 Thank you. Have a good day everybody.

24 ---

EXAMINATION

BY ATTORNEY BROOKS:

Q. For convenience --- good morning, Dr. Adkins,

A. Good morning.

Q. --- and thank you for your time here today.

ATTORNEY BROOKS: For convenience, let me start out by marking three exhibits. As Adkins Exhibit Number 1, I would like to mark the Declaration and expert report of Deanna Adkins, which in the file will be made available to the court reporter is tab two. And I have copies for the witness and for counsel. I would also like to mark as Adkins Exhibit 2 what we have provided as tab three, which is the CV of the witness, Deanna Adkins.

(Whereupon, Adkins Exhibit 1, Report of Deanna Adkins, M.D., was marked for identification.)

(Whereupon, Adkins Exhibit 2, Curriculum Vitae, was marked for identification.)

THE WITNESS: If you don't mind, it's

1 Deanna (corrects pronunciation).

2 ATTORNEY BROOKS: Deanna. I certainly
3 don't mind. I want to get that right. Sorry about
4 that.

5 THE WITNESS: Thank you.

6 ATTORNEY BROOKS: And I would like to
7 admit as Exhibit 3 the rebuttal report submitted by Dr.
8 Adkins. I will provide copies of that to the witness.
9 Just write the number on it.

10 THE WITNESS: Thank you.

11 ATTORNEY BROOKS: We'll have occasion to
12 come back to those.

13 ---

14 (Whereupon, Adkins Exhibit 3, Rebuttal
15 Report, was marked for identification.)

16 ---

17 BY ATTORNEY BROOKS:

18 Q. Dr. Adkins, let me ask you to find amongst the
19 three documents I have given you Exhibit 2, which is
20 your Curriculum Vitae.

21 VIDEOGRAPHER: Counsel, do you want that
22 pulled up on the shared screen?

23 ATTORNEY BROOKS: That's up to the
24 remote. You should certainly make it available.

1 Obviously, everybody here in the deposition room has it.

2 BY ATTORNEY BROOKS:

3 Q. Dr. Adkins, let me ask you to turn to page two
4 of Exhibit 2, your Curriculum Vitae. And you have there
5 a list headed professional training and academic career.
6 Do you see that?

7 A. Yes.

8 Q. Am I right that you have done either residencies
9 or fellowships in the field of pediatrics and
10 endocrinology?

11 ATTORNEY BORELLI: Objection, form.

12 THE WITNESS: I've done both, yes,
13 residency and fellowship in pediatrics followed by
14 endocrinology, yes.

15 BY ATTORNEY BROOKS:

16 Q. And you have not done either a residency nor a
17 fellowship in psychiatry. Have you?

18 ATTORNEY BORELLI: Objection to form.

19 THE WITNESS: No.

20 BY ATTORNEY BROOKS:

21 Q. And you don't have any degree in child or
22 adolescent developmental psychology, do you?

23 A. No.

24 Q. Do you consider yourself trained and

1 professionally competent in using the American
2 Psychiatric Association Diagnostic and Statistical
3 Manual to make child and adolescent mental illness or
4 psychiatric diagnoses generally outside the scope of
5 gender dysphoria?

6 ATTORNEY BORELLI: Objection, form.

7 THE WITNESS: In pediatrics, we're
8 trained to make some of the diagnoses that are
9 appropriate for a pediatrics provider to treat.

10 BY ATTORNEY BROOKS:

11 Q. So is that a --- do you consider yourself
12 generally competent in making diagnosis of child or
13 adolescent mental illness according to the standards of
14 DSM-V?

15 ATTORNEY BORELLI: Objection, form.

16 THE WITNESS: For the things I was
17 trained in and have continued to get CME in, I do.

18 BY ATTORNEY BROOKS:

19 Q. And you do not have any training in sports
20 physiology, do you?

21 ATTORNEY BORELLI: Objection, form.

22 THE WITNESS: Nothing specific.

23 BY ATTORNEY BROOKS:

24 Q. You would consider that to be outside your field

1 of professional expertise. Am I right?

2 ATTORNEY BORELLI: Objection, form.

3 THE WITNESS: There is probably some over
4 lap given that physiology and endocrinology are very
5 important and tied and interlinked, but I couldn't tell
6 you since I don't know where the overlap might be.

7 BY ATTORNEY BROOKS:

8 Q. You yourself have not done any research related
9 to sports physiology, have you?

10 ATTORNEY BORELLI: Objection, form.

11 THE WITNESS: Not myself, no.

12 BY ATTORNEY BROOKS:

13 Q. Nor have you done any research relating to the
14 impact of hormones on athletic capability?

15 ATTORNEY BORELLI: Objection, form.

16 THE WITNESS: Not personally.

17 BY ATTORNEY BROOKS:

18 Q. Do you consider yourself to be an expert in any
19 sense in the question of what is or is not fair?

20 ATTORNEY BORELLI: Objection, form.

21 THE WITNESS: Well, that's a broad
22 question. That's ---.

23 BY ATTORNEY BROOKS:

24 Q. Do you consider yourself an expert in the

1 concept of fairness?

2 ATTORNEY BORELLI: Objection.

3 THE WITNESS: I believe that I can
4 recognize fairness and have a concept that would be
5 appropriate for someone of my age.

6 BY ATTORNEY BROOKS:

7 Q. Do you believe that you have expertise and
8 fairness beyond that from ordinary human experience?

9 ATTORNEY BORELLI: Objection, form.

10 THE WITNESS: I would have to see what
11 that would look like to say yes or no to that question.

12 BY ATTORNEY BROOKS:

13 Q. All right.

14 Let's look at your list of publications, which
15 is on page three of Exhibit 2, your curriculum vitae.
16 And under the --- the page three and continuing onto
17 page four is a section titled Refereed Journal.

18 Correct?

19 A. Yes.

20 Q. And by Refereed Journal --- we'll both have to
21 remember that. And also the court reporter may from
22 time to time tell one of us to slow down. These all
23 just ordinary parts of the process, just forgetting to
24 speak up or to go slow enough to be transcribed.

1 Can you explain for the record what you mean by
2 refereed journal, what the significance of that heading
3 is?

4 A. Yes. So for those journals they are reviewed by
5 an editor, and those are peer reviewed as well.

6 Q. So these --- this would be the list of your
7 publications that would --- you would consider to be
8 peer reviewed publications?

9 ATTORNEY BORELLI: Objection, form.

10 THE WITNESS: Looking at the date on the
11 front of this one, yes.

12 BY ATTORNEY BROOKS:

13 Q. And that date is January 21st of this year,
14 2022.

15 Right?

16 A. Yes.

17 Q. And have you had any peer reviewed publication
18 appear since January 21st of this year?

19 A. I have one that is --- that's in press for next
20 month.

21 Q. And what is the title of that?

22 A. I would have to review the title in my e-mail.
23 It's Clinical Simulation for Education of Nurse
24 Anesthesia in Gender Affirming Care.

1 Q. Thank you.

2 A. Roughly.

3 Q. Roughly?

4 I see an article here, number three on the
5 list, Tejawani, from Tejawani, et al, and you are one of
6 the authors shown from year 2017. Do you see that?

7 A. Yes.

8 Q. And that relates to disorders of sexual
9 development.

10 Am I correct?

11 A. Yes.

12 Q. And am I correct that that article has ---
13 doesn't speak at all to the questions of gender.

14 Does it?

15 ATTORNEY BORELLI: Objection to form.

16 THE WITNESS: That, no.

17 BY ATTORNEY BROOKS:

18 Q. Not correct?

19 A. I'm sorry, no, it doesn't speak.

20 Q. Just to be clear for the record, the Tejawani et
21 al. article which you are a co-author does not speak at
22 all to questions of gender identity.

23 Correct?

24 ATTORNEY BORELLI: Objection, form.

1 THE WITNESS: Correct.

2 BY ATTORNEY BROOKS:

3 Q. And I see here a Lapinski, et al. article, the
4 4th item, from 2018, entitled Best Practices in
5 Transgender Health: A Clinician's Guide for Primary
6 Care.

7 Do you see that?

8 A. Yes.

9 Q. Am I correct that that article does not report
10 on any regional research by the authors?

11 ATTORNEY BORELLI: Objection to form.

12 THE WITNESS: I believe that's true.

13 BY ATTORNEY BROOKS:

14 Q. Are you the author of any peer reviewed papers
15 that report original clinical research relating to
16 gender identity or for transgender therapies?

17 ATTORNEY BORELLI: Objection to form.

18 ATTORNEY BROOKS: I don't know who spoke
19 to the witness.

20 THE WITNESS: So gosh, I have a lot of
21 things that are in process. Let me give it a second.

22 ATTORNEY BORELLI: Take the time you need
23 to review that to answer the question fully.

24 THE WITNESS: Could you repeat the

1 question?

2 BY ATTORNEY BROOKS:

3 Q. Yes. Are you the author of any published peer
4 reviewed papers that report original clinical research
5 relating to gender identity or transgender therapies?

6 ATTORNEY BORELLI: Objection to form.

7 THE WITNESS: The item on number six
8 would be the closest. And it is talking with patients
9 about the gender identity and their experience of
10 transgender care, yes.

11 BY ATTORNEY BROOKS:

12 Q. The --- that paper in particular is essentially
13 calling for research.

14 Am I correct?

15 ATTORNEY BORELLI: Objection to form.

16 THE WITNESS: Yes.

17 BY ATTORNEY BROOKS:

18 Q. It is not reporting on accomplished clinical
19 research, is it?

20 ATTORNEY BORELLI: Objection, form.

21 THE WITNESS: So in that study we
22 actually did interview individuals as part of the study,
23 so it has --- it's done as a --- oh, Lord, words. I'm
24 going to find the word in a second. Not in like ---

1 more of a public health-based research approach where
2 you do not actual like counting of things like you would
3 do sort of --- search, but more around interviewing and
4 looking at quantitate versus qualitative. That's the
5 word I'm looking for. It's a qualitative study which is
6 typically done in public health programs or other public
7 health research.

8 Q. All right.

9 Am I correct, Dr. Adkins, that you, yourself,
10 have not treated nor personally examined Plaintiff,
11 B.P.J.?

12 ATTORNEY BORELLI: Objection, form.

13 THE WITNESS: That's correct.

14 BY ATTORNEY BROOKS:

15 Q. And you don't have any direct knowledge as to at
16 what Tanner stage B.P.J. began puberty blockers.

17 Am I correct?

18 A. I don't recall seeing that in any of the
19 documentation.

20 Q. And you don't have any knowledge as to how
21 B.P.J.'s physiology or athletic capabilities compare to
22 a genetic female of a similar age, do you?

23 ATTORNEY BORELLI: Objection, form.

24 THE WITNESS: I haven't assessed the

1 particular patient, person.

2 BY ATTORNEY BROOKS:

3 Q. Let me take you again to Exhibit 2 and page two
4 ---?

5 ATTORNEY MORGAN: May I interrupt for a
6 moment.

7 ATTORNEY BROOKS: I'm sorry. Who's
8 speaking?

9 ATTORNEY MORGAN: Sure. This is Kelly
10 Morgan. I'm having a terrible time understanding the
11 witness. So before we go on is there any way to see if
12 we can --- it sounds extremely muffled. I'm only
13 catching like maybe half of the words.

14 ATTORNEY BROOKS: Most --- most of the
15 voice is coming through very clear on our end. I'm
16 going to move speaker so that paper shuffling is not as
17 likely to shuffle it. Beyond that, I think everybody in
18 this room will agree that we're speaking slowly and
19 clearly and, frankly, loudly. So I'm not sure there's
20 more we can do.

21 ATTORNEY BORELLI: And Kelly, for what it
22 is worth, I think I caught maybe half of your words. I
23 wonder if there is a connection issue on your end that
24 might be worth investigating.

1 ATTORNEY HARTNETT: I will just say for
2 the record, and others should speak up too because we
3 obviously want all counsel to hear the deposition. I
4 have been able to hear Mr. Brooks, the witness, and the
5 objections have been a bit more faint, but we have been
6 able to make them out so far.

7 ATTORNEY TRYON: This is Dave Tryon. I
8 share Kelly's frustration. I'm having difficulty
9 understanding the witness, so ---.

10 ATTORNEY BROOKS: And similarly, Dave,
11 when we hear you, you're a little bit more muffled than
12 some of the other voices. So the issue, perhaps the
13 mics and speakers on the other end, but there's nothing
14 more we can do at this end.

15 ATTORNEY GREEN: This is Roberta Green,
16 and I'm also having trouble hearing. And I'm
17 considering maybe --- you know, maybe muting my computer
18 and calling in on my phone and see if I can hear better.
19 I think when the doctor looks down to look at documents
20 we lose some of that. So I'll report in if calling in
21 on my phone is a breakthrough, but I appreciate you all.
22 Thank you.

23 ATTORNEY DENIKER: Yes. Thank you. I'm
24 also having trouble. And I'm curious if the court

1 reporter is having trouble. And if she's not, that's
2 good, but I just want to make sure that we --- that
3 everybody can hear.

4 COURT REPORTER: So my biggest issue is
5 people not saying their names when they're speaking. So
6 we just had a bunch of people and I really have no idea
7 who is sayin anything. I don't know who is making the
8 objections. And ma'am, with the mask on, it is hard to
9 understand you at times. I'm really like having to
10 really focus in on you. And the objections are coming
11 in quick. And I mean, there are definitely some
12 challenges, but I don't know.

13 ATTORNEY BORELLI: Well, in case this is
14 helpful, so this is Tara Borrelli with Lambda Legal on
15 behalf of the Plaintiff. I am the person defending the
16 deposition, so the objections will be coming from me, in
17 case that's helpful going forward.

18 COURT REPORTER: Yes.

19 ATTORNEY HARTNETT: This is Kathleen
20 Hartnett for the Plaintiff from Cooley. I was the first
21 person that spoke after someone raised the issue. I
22 believe Miss --- Ms. Morgan had raised the issue of the
23 ability to hear. And I would just say for the record
24 this is an in person deposition that was scheduled where

1 we had proposed it to be remote if parties saw fit to do
2 that. We're not objecting to it being in person. We're
3 --- obviously they're defending. And all parties had
4 the ability to attend in person if they chose to.

5 ATTORNEY BROOKS: And I --- I will ---
6 this is Roger Brooks taking the deposition. I will
7 suggest that we just agree by voice acclimation that
8 we're not going to cycle through all the names and try
9 to identify all the people who have chatted with us
10 about their reception and simply move on with the
11 deposition unless anybody objects to that.

12 ATTORNEY MORGAN: I have no objection to
13 that. This is Kelly Morgan. But is there any
14 possibility that the witness would be able to remove her
15 mask if everyone else is masked other than the
16 questioner? Like I --- I'm not having trouble hearing
17 anyone else other than the witness, and it just seems to
18 get muffled.

19 ATTORNEY BORELLI: I'm sorry, but I --- I
20 don't believe that's going to be an option. I mean,
21 this --- this is partly why a remote deposition would
22 have been our --- our preference, but Dr. Adkins
23 obviously has to take precautions because she is
24 continuing to see and treat patients. And so she needs

1 to protect her health.

2 ATTORNEY BROOKS: And we did agree to
3 proceed in whatever way the witness wanted when it comes
4 to that, so we'll all just have to live with that as
5 part of these days.

6 May we proceed?

7 ATTORNEY TRYON: Yes.

8 BY ATTORNEY BROOKS:

9 Q. If you have Exhibit 2 and on page two of that we
10 have professional training and academic career, which
11 towards the bottom includes your current two
12 appointments associated with Duke University.

13 Am I correct?

14 A. Three.

15 Q. I apologize. I see that. One is you're an
16 Associate Professor of Pediatrics.

17 Correct?

18 A. Correct.

19 Q. And you are the Director of the Duke Child and
20 Adolescent Gender Care Clinic?

21 A. Correct.

22 Q. And you are a Co-Director of the Duke Sexual and
23 Gender Health and Wellness Program.

24 Correct?

1 A. Correct.

2 Q. What is the total compensation you receive in
3 connection with those three appointments with Duke
4 University?

5 ATTORNEY BORELLI: Objection, form.

6 THE WITNESS: Well, you want a number or
7 ---?

8 BY ATTORNEY BROOKS:

9 Q. I do.

10 A. I'm going to have to give an approximation.

11 Q. And that's fine?

12 A. Approximately, \$173,000 per year.

13 Q. And that is your total compensation on a W-2
14 from Duke University?

15 A. No. Duke University only pays me \$20,000 per
16 year. I work for the private Diagnostic Clinic, which
17 is our private practice, and they pay me the balance.

18 Q. Okay.

19 And do you receive any other compensation in
20 connection with your work with patients in connection
21 with the Duke Child and Adolescent Gender Care Clinic?

22 ATTORNEY BORELLI: Objection, form.

23 THE WITNESS: No.

24 BY ATTORNEY BROOKS:

1 Q. Can you tell me what you earned in speaking fees
2 in 2021, approximately?

3 ATTORNEY BORELLI: Objection, form.

4 THE WITNESS: In 2021? Is that what you
5 said?

6 BY ATTORNEY BROOKS:

7 Q. I did.

8 A. Let's see. I'm losing track of dates. I think
9 only like \$500.

10 Q. And what were the total expert fees that you
11 received in 2021 in connection with serving as an expert
12 in litigation?

13 ATTORNEY BORELLI: Objection, form.

14 THE WITNESS: Nothing.

15 BY ATTORNEY BROOKS:

16 Q. And in 2021 did you receive any payments for any
17 reasons from any pharmaceutical company?

18 ATTORNEY BORELLI: Objection, form.

19 THE WITNESS: No.

20 BY ATTORNEY BROOKS:

21 Q. Let me ask you to look at Exhibit 1, which is
22 your expert report. And if you would turn --- if you
23 would turn to paragraph 37 of that report, paragraph 38.
24 And there you say when a child is born a sex assignment

1 is usually made based on the infant's externally visible
2 genitals. This designation is then recorded and usually
3 becomes the sex designation listed on the infant's birth
4 certificate. Do you see that language?

5 A. I do.

6 Q. And as a trained physician, can you tell us how
7 a sex assignment is usually made based on the infant's
8 external visible genitals?

9 A. Yes. In most cases the external genitals will
10 have a form that looks typical to a male versus typical
11 to a female. And if there is a question, then I get
12 consulted, if there's something different.

13 Q. And by typical to a male, for instance, you mean
14 what?

15 A. So male external genitalia at birth typically
16 has a phallic structure, penis that is, of a certain
17 length most of the time. And then there's scrotum and
18 then there are usually testicles, although sometimes
19 they can be up or down in the scrotum.

20 Q. And do you, yourself, have children?

21 A. I do.

22 Q. And you're aware that for quite a number of
23 years now, in fact, parents often learn of the sex of
24 their child before birth.

1 Correct?

2 ATTORNEY BORELLI: Objection, form.

3 THE WITNESS: I have been aware that
4 ultrasonographers often tell people what they think they
5 are. And I'm also the one that has to tell the parents
6 that it is different when they're born and it is not
7 exactly accurate.

8 BY ATTORNEY BROOKS:

9 Q. That is as a result of the quality of imaging on
10 ultrasound sometimes the wrong call is made on that?

11 ATTORNEY BORELLI: Objection, form.

12 THE WITNESS: Possibly the quality of
13 imaging, the skill of the person. There are also
14 sometimes variations that aren't easily visible on
15 ultrasound.

16 BY ATTORNEY BROOKS:

17 Q. You're are aware, are you not, that the genetic
18 sex of infant is, in fact, determinable by genetic
19 testing as early as the first trimester of pregnancy?

20 ATTORNEY BORELLI: Objection to form.

21 THE WITNESS: The typical testing for
22 that is chromosomes, which are broad view and not
23 specific for the hundreds of genes that can change the
24 sex of the individual.

1 BY ATTORNEY BROOKS:

2 Q. Well, my question was you are aware, are you
3 not, that the chromosomal sex of the infant is
4 determinable as early as the first trimester of
5 pregnancy?

6 ATTORNEY BORELLI: Objection, form.

7 THE WITNESS: I'm sorry. I didn't hear
8 you say chromosomal. I thought you said biological. I
9 apologize.

10 BY ATTORNEY BROOKS:

11 Q. I can't swear what I said the first time.

12 ATTORNEY BROOKS: Let's ask the reporter
13 to read back the second question I asked. Is the court
14 reporter muted perhaps?

15 COURT REPORTER: One minute.

16 ATTORNEY BROOKS: Okay.

17 COURT REPORTER: You said genetic
18 testing. Do you want me to read the whole question?

19 ATTORNEY BROOKS: I do.

20 COURT REPORTER: You are aware, are you
21 not, that the genetic sex of an infant is determinable
22 by genetic testing as early as the first trimester of
23 pregnancy?

24 ATTORNEY BORELLI: Objection to form.

1 COURT REPORTER: And again I just want to
2 say that the witness is hard to understand. There is
3 definitely a lot of muffling words coming through, you
4 know, just like in the sentence there might be two words
5 that I just have to like really --- I'm just struggling
6 over here with this mask. I can't see your lips moving,
7 so it's really hard, but --.

8 THE WITNESS: I'll slow down, but I was
9 sick earlier this week, and I'd really rather not share
10 that with anyone in the room. And I don't think that
11 they would like that, so ---.

12 BY ATTORNEY BROOKS:

13 Q. Don't consider yourself pressured to take off
14 your mask. Just do what you can to speak clearly into
15 the microphone.

16 ATTORNEY BORELLI: Thank you. And we
17 just moved the mic closer to the witness as well, so we
18 --- we hope that that will help make a difference.

19 ATTORNEY HARNETT: Excuse me. This is
20 Kathleen Hartnett from Cooley. I would like to ask
21 whether the videotaping that's happening now will allow
22 further transcription after the deposition?

23 VIDEOGRAPHER: Yes, that's --- the
24 videotape is picking up everything that --- I'm having

1 no troubles on my side, so it's picking up all of the
2 audio and everything.

3 ATTORNEY HARTNETT: Thank you very much.

4 VIDEOGRAPHER: You're welcome.

5 ATTORNEY BROOKS: And rather than
6 re-reading the question, I'm just going to forget all
7 that and ask you a new question.

8 BY ATTORNEY BROOKS:

9 Q. You are aware, are you not, that the chromosomal
10 sex of an infant nowadays can be determined as soon as
11 the first trimester of pregnancy?

12 ATTORNEY BORELLI: Objection to form.

13 THE WITNESS: You can obtain the baseline
14 chromosomes, yes.

15 BY ATTORNEY BROOKS:

16 Q. And that will tell you the chromosomal sex of
17 that infant?

18 ATTORNEY BORELLI: Objection, form.

19 THE WITNESS: The --- not really a term
20 that is really precise as there's hundreds of genes that
21 can change that.

22 BY ATTORNEY BROOKS:

23 Q. So you are not able to answer my question yes or
24 no?

1 ATTORNEY BORRELLI: Objection to form.

2 THE WITNESS: I'm not able to answer the
3 question yes or no.

4 BY ATTORNEY BROOKS:

5 Q. You would agree that the genetic sex of an
6 infant is determined at the instant of conception?

7 ATTORNEY BORELLI: Objection to form.

8 THE WITNESS: The actual Y chromosomes
9 are at that time, yes.

10 BY ATTORNEY BROOKS:

11 Q. That's not something that a doctor has any
12 choice or could change at the time of birth?

13 ATTORNEY BORELLI: Objection, form.

14 THE WITNESS: The chromosomes, no.

15 BY ATTORNEY BROOKS:

16 Q. And you understand what I think we all learned
17 in perhaps sixth grade biology that an individual with
18 two X chromosomes, provided that there is no chromosomal
19 abnormality, is female female and an individual free of
20 abnormalities who has an X and a Y chromosome is male.

21 Correct?

22 ATTORNEY BORELLI: Objection, form.

23 THE WITNESS: Free of any abnormalities,
24 yes.

1 BY ATTORNEY BROOKS:

2 Q. And you also understand that in humans, like all
3 mammals, a gamete from a male and a gamete from a female
4 are necessary to create a fertilized egg in a new
5 individual?

6 ATTORNEY BORELLI: Objection, form.

7 THE WITNESS: Can you read the very first
8 part of the question again, please?

9 BY ATTORNEY BROOKS:

10 Q. You understand that in humans, as in all
11 mammals, a gamete from a male and a gamete from a female
12 are necessary to create a fertilized egg and a new
13 individual?

14 ATTORNEY BORELLI: Same objection.

15 THE WITNESS: Yes.

16 BY ATTORNEY BROOKS:

17 Q. Now, if you look at paragraph 41 in your
18 declaration ---

19 A. Yes.

20 Q. --- in paragraph 41 you state, quote, biological
21 sex, biological male or female are imprecise and should
22 be avoided. Do you see that?

23 A. Yes.

24 Q. And it is your view that the terms biological

1 male, biological female and biological sex are so
2 imprecise as to be not useful from a medical point of
3 view?

4 ATTORNEY BORELLI: Objection, form.

5 THE WITNESS: In my practice we have to
6 be more careful than that because I see quite a lot of
7 individuals where that wouldn't be a very precise
8 answer.

9 BY ATTORNEY BROOKS:

10 Q. My question is is it your expert opinion, are
11 you offering expert opinion in terms of biological sex,
12 biological male and biological female are so imprecise
13 as to not be medically useful?

14 ATTORNEY BORELLI: Objection, form.

15 THE WITNESS: Yes.

16 ATTORNEY BROOKS: Let me mark as Exhibit
17 4 what is tab 5, and that is the Endocrine Society
18 Guidelines dated 2017, but the number of authors. The
19 first name is Wiley Hembree.

20 ---

21 (Whereupon, Adkins Exhibit 4, 2017
22 Endocrine Society Guidelines, was marked
23 for identification.)

24 ---

1 ATTORNEY BROOKS: I'm handing that to the
2 witness and to opposing counsel.

3 BY ATTORNEY BROOKS:

4 Q. Dr. Adkins, this is a document that you cite in
5 your expert report.

6 Correct?

7 A. Correct.

8 Q. And with which you are quite familiar?

9 A. Correct.

10 Q. Do you know Dr. Hembree?

11 A. I spoke with him on the phone.

12 Q. You would agree, would you not, that he's been
13 prominent in the field of transgender medicine for
14 decades?

15 ATTORNEY BORELLI: Objection, form.

16 THE WITNESS: His publications, yes.

17 BY ATTORNEY BROOKS:

18 Q. And another author is Peggy Cohen-Kettenis. Do
19 you see that? She's the second author.

20 A. Yes.

21 Q. And likewise, she has been prominent in the
22 field for at least 20 years?

23 ATTORNEY BORELLI: Objection.

24 THE WITNESS: I've seen publications in

1 that date range, yes.

2 BY ATTORNEY BROOKS:

3 Q. Have you met Dr. Cohen-Kettenis?

4 A. No.

5 Q. And she is associated with a highly respected
6 institute in Amsterdam.

7 Am I right?

8 A. I am not certain. I would have to look that up.

9 Q. You don't know. You weren't invited to serve on
10 the committee that drafted these guidelines, were you?

11 ATTORNEY BORELLI: Objection, form.

12 THE WITNESS: There is an invitation
13 extended to all Endocrine Society members. I did find a
14 time. That was early in my work with this at that time.

15 BY ATTORNEY BROOKS:

16 Q. If you look down on page one, about five lines
17 from the bottom ---.

18 A. Say it again.

19 Q. Page one, five lines from the bottom?

20 A. Yes.

21 Q. Actually, let's go two more up and begin a
22 sentence. There's a sentence that begins they require a
23 safe and effective hormone regimen that will, one,
24 suppress endogenous sex hormone secretion determined by

1 the person's genetic/gonadal sex. Do you see that?

2 A. I do.

3 Q. And do you think you understand what's referred
4 to by the term genetic/gonadal sex?

5 ATTORNEY BORELLI: Objection, form.

6 THE WITNESS: Yes.

7 BY ATTORNEY BROOKS:

8 Q. And what is your understanding of what that
9 refers to?

10 A. So that would include both the chromosomes as
11 mentioned before, the broad XY, and it should include
12 all of the other genetic mutations as well as what
13 actual gonads are present in the person.

14 Q. And this committee, these prominent researchers
15 at least considered genetic/gonadal sex to be a
16 meaningful and readily understandable binary
17 classification.

18 Correct?

19 ATTORNEY BORELLI: Objection, form.

20 THE WITNESS: That's not clear there and
21 it is different from what you said before.

22 BY ATTORNEY BROOKS:

23 Q. I try to make each question somewhat different
24 from the one before, so yes. Let me ask a new question.

1 This committee considered --- the committee that drafted
2 these guidelines considered genetic/gonadal sex to be a
3 meaningful and readily understandable classification.

4 Correct?

5 ATTORNEY BORELLI: Objection, form.

6 THE WITNESS: Yes. They didn't use the
7 word chromosomal sex. And they included gonads which
8 are also a part of the broad development of human
9 reproductive biology.

10 BY ATTORNEY BROOKS:

11 Q. And in fact, you, yourself, quoted this language
12 in your expert report, did you not?

13 A. Yes.

14 Q. And genetic sex, in your understanding, what is
15 the meaning of genetic sex?

16 ATTORNEY BORELLI: Objection, form.

17 THE WITNESS: Well, in most patients, in
18 most people, it is whether you received an X or a Y
19 chromosome and all of your body parts include an XY
20 containing or an XX containing cell. There are cases
21 where you can have mosaicism or different parts of a
22 human at different sex chromosomes where a part is XX, a
23 part is XY, part is XO. And then there is also some
24 mutations that can occur in lots of other locations that

1 can determine whether or not a patient's, you know,
2 likely to have the rest of their human development
3 appear as what we would more typically see in a male
4 human or a female human.

5 BY ATTORNEY BROOKS:

6 Q. Well, in every human individual who is healthy
7 and free of disorder of sexual development, genetic sex
8 and gonadal sex are --- directly correspond.

9 Correct?

10 ATTORNEY BORELLI: Objection, form.

11 THE WITNESS: Typically, yes.

12 BY ATTORNEY BROOKS:

13 Q. So in a healthy individual free of genetic
14 defect every individual who is chromosomally XX is going
15 to have female gonads and female genitalia.

16 Correct?

17 ATTORNEY BORELLI: Objection to form.

18 THE WITNESS: My only concern is I would
19 not use defect as a language. There's --- you know, we
20 see variation across humans and we --- you know, there
21 are variations that are normal and variations that are
22 typical versus rare. So I would not call it necessarily
23 a defect, maybe a variation would be the word I would
24 use.

1 BY ATTORNEY BROOKS:

2 Q. The relationship between chromosomal sex and
3 gonads are not separate things that can vary in healthy
4 individuals, are they?

5 ATTORNEY BORELLI: Objection to form.

6 THE WITNESS: Well, I have healthy
7 individuals who have XY chromosomes and external
8 genitalia that are completely female.

9 ATTORNEY BROOKS: Let me mark as Exhibit
10 5 the prior edition guidelines put out by the Endocrine
11 Society in 2009, eight years earlier.

12 ---

13 (Whereupon, Adkins Exhibit 5, 2009
14 Endocrine Society Guidelines, was marked
15 for identification.)

16 ---

17 BY ATTORNEY BROOKS:

18 Q. And the primary author is on --- the first
19 author on the 2009 guidelines are the same individuals,
20 Dr. Hembree and Cohen-Kettenis?

21 Correct?

22 A. Correct.

23 ATTORNEY BORELLI: Objection, form.

24 BY ATTORNEY BROOKS:

1 Q. In fact, you, yourself, were familiar with and
2 regularly consulted these guidelines.

3 Am I correct?

4 ATTORNEY BORELLI: Objection to form.

5 THE WITNESSS: Prior to 2017?

6 BY ATTORNEY BROOKS:

7 Q. Correct.

8 A. I used these guidelines.

9 Q. And did you find them to be incomprehensible?

10 ATTORNEY BORELLI: Objection, form.

11 THE WITNESS: No.

12 BY ATTORNEY BROOKS:

13 Q. If you look with me on page marked 3134, which
14 is the third page of the document, second column three
15 quarters of the way down is the definition of --- under
16 the heading of definitions is a definition of
17 transsexual or transsexual people.

18 Do you see that?

19 A. I see it.

20 Q. It says there that a transsexual person refers
21 to a biological male who identifies as or desires to be
22 a female --- a member of the female gender or vice
23 versa.

24 Do you see that?

1 A. Yes.

2 Q. And so in 2009 these prominent authors in the
3 field considered biological male to be a scientifically
4 useful and adequately clear term for them to use in
5 these guidelines issued by the Endocrine Society.

6 Correct?

7 ATTORNEY BORELLI: Objection, form.

8 THE WITNESS: It's written that way in
9 this paper, yes.

10 BY ATTORNEY BROOKS:

11 Q. And you in that time period 2009 to just 2017
12 used these guidelines and were able to understand them.

13 Correct?

14 ATTORNEY BORELLI: Objection, form.

15 THE WITNESS: You know, I would have to
16 spend some time looking to see what else is in here. It
17 has been a long time since I've used these particular
18 and pulled out. And it is a single location. It can
19 sometimes be misleading if you're aware --- if you've
20 read many medical articles.

21 BY ATTORNEY BROOKS:

22 Q. So you don't recall whether you found these
23 guidelines to be comprehensible and useful for your
24 purposes in the years between 2009 and 2017?

1 ATTORNEY BORELLI: Objection, form.

2 THE WITNESS: Generally they were useful.

3 BY ATTORNEY BROOKS:

4 Q. If you look just a little lower is --- the next
5 definition is transition.

6 Do you see that?

7 A. Yes.

8 Q. And it refers to a period of time during which
9 transsexual persons change their physical, social and
10 legal characteristics to the gender opposite that of
11 their biological sex.

12 Do you see that?

13 A. I do.

14 Q. And again, these authors used the term
15 biological sex, did they not?

16 A. They did.

17 Q. And they indicated their understanding that
18 biological sex is binary in referring to opposite of a
19 biological sex.

20 Correct?

21 ATTORNEY BORELLI: Objection, form.

22 THE WITNESS: In this older version they
23 do use more binary terms. As you know, language changes
24 over time. In the new guidelines they don't talk as

1 much about binary.

2 BY ATTORNEY BROOKS:

3 Q. Is it your belief that the underlying biology
4 has changed since 2009?

5 ATTORNEY BORELLI: Objection, form.

6 THE WITNESS: Our understanding of a lot
7 of things in this area is growing rapidly. It's a rapid
8 area of research.

9 BY ATTORNEY BROOKS:

10 Q. Let me ask you to turn in this document to page
11 3141.

12 A. Same document, 3141?

13 Q. Yes.

14 A. Thank you.

15 Q. And here we're in a discussion of the use of
16 GRNH analogs, which is to say puberty blockers.

17 Am I correct?

18 A. Which section?

19 Q. Well, the heading is 2.3, evidence, and it is
20 talking about in the second paragraph treatment with
21 GRNH analogs?

22 ATTORNEY BORELLI: Counsel, can we give
23 the witness one moment to look at this?

24 ATTORNEY BROOKS: Of course.

1 ATTORNEY BORELLI: Thank you.

2 THE WITNESS: Yes, that appears to be
3 what is discussed in this section.

4 BY ATTORNEY BROOKS:

5 Q. Here the authors in the 2009 Endocrine Society
6 guidelines describe the effect of treatment with puberty
7 blockers.

8 Correct?

9 ATTORNEY BORELLI: Objection, form.

10 THE WITNESS: Yes.

11 BY ATTORNEY BROOKS:

12 Q. And they say among other things that, quote, in
13 girls breast development will become atrophic and menses
14 will stop. And they continue, quote, in boys
15 verilization will stop and testicular volume will
16 decrease.

17 Do you see those quotes?

18 A. I do.

19 Q. Again, in 2009, the Endocrine Society didn't
20 think there was ambiguity or imprecision as to what is a
21 girl and what is a boy for purposes of development in
22 puberty, did they?

23 ATTORNEY BORELLI: Objection to form.

24 THE WITNESS: As I said, the language

1 would be different and likely is different in
2 conversations around this because it is not as precise
3 as I would use or my colleagues would use.

4 BY ATTORNEY BROOKS:

5 Q. In 2009 the Endocrine Society in publishing
6 these guidelines didn't think there was any ambiguity or
7 imprecision as to what is a girl and what is a boy for
8 purposes of the effect of puberty.

9 Correct?

10 ATTORNEY BORELLI: Objection to form.

11 THE WITNESS: I would have to read the
12 article up to this point to see what their
13 clarifications are with regard to those phrases.
14 Oftentimes in the beginning of articles they will
15 clarify what they mean by a particular phrase, and
16 taking it out of context is a little bit difficult for
17 me to just say it is true right here on the spot.

18 ATTORNEY BORELLI: I would also just
19 object to the extent that we're asking about select
20 definitions without having given the witness an
21 opportunity to review the entire definition and section
22 of the document and asking her to draw conclusions about
23 the larger document.

24 ATTORNEY BROOKS: Counsel, I think that

1 you are supposed to under the Rules to confine your
2 objections to stating objection.

3 BY ATTORNEY BROOKS:

4 Q. In your practice today with respect to
5 individuals who do not suffer from any disorder of
6 sexual development you don't have any trouble telling
7 girls from boys, do you?

8 ATTORNEY BORELLI: Objection to form.

9 THE WITNESS: I do not have trouble
10 deciding who was assigned female at birth versus those
11 who were assigned male at birth.

12 BY ATTORNEY BROOKS:

13 Q. We have already talked about how that assignment
14 is done based on observation of genitalia, which depend
15 on underlying genetic sex.

16 Right?

17 ATTORNEY BORELLI: Objection, form.

18 THE WITNESS: So the typical manner of
19 assignment we have discussed. Sometimes those things
20 change over time with --- absent of course a difference
21 of sex development or intersex conditions. Typically
22 they would match.

23 BY ATTORNEY BROOKS:

24 Q. And if you are, for instance, getting ready to

1 prescribe cross sex hormones for a patient in patients
2 who are free of any disorder of sexual development you
3 don't have any trouble determining which patients need
4 testosterone as a cross sex hormone versus which
5 patients need estrogen as a cross sex hormone, do you?

6 ATTORNEY BORELLI: Objection, form.

7 THE WITNESS: My mouth is getting dry. I
8 don't have any trouble with that.

9 BY ATTORNEY BROOKS:

10 Q. And that's because absent rare and unusual
11 disorders of sexual development it's really easy for all
12 of us to tell girls from boys, isn't it?

13 ATTORNEY BORELLI: Objection to form.

14 THE WITNESS: With regard to their sex
15 assignment at birth, yes.

16 BY ATTORNEY BROOKS:

17 Q. Now, you've mentioned a couple times when I
18 asked you questions about the 2009 guidelines that
19 perhaps a language that's used has changed.

20 Am I right?

21 A. Yes.

22 Q. You are not contending that how human biology
23 works has changed?

24 ATTORNEY BORELLI: Objection, form.

1 THE WITNESS: Our understanding of human
2 biology at this time is accelerating greatly, especially
3 in the area of genetics. We can now look at someone's
4 whole exome, whole chromosome, and it's --- I mean in
5 this timeframe there's an amazing amount of information
6 that's become more clear.

7 BY ATTORNEY BROOKS:

8 Q. So is it your --- are you asserting that the
9 more recent Endocrine Society policy statement should be
10 accepted as a more precise Scientific statement?

11 ATTORNEY BORELLI: Objection, form.

12 THE WITNESS: The goal is for that to be,
13 yes, when you are writing those. And it's also been
14 sometimes since this was published as well.

15 BY ATTORNEY BROOKS:

16 Q. Since the 2017 guidelines?

17 A. Correct.

18 Q. But in general, is it your view the more recent
19 statements of the Endocrine Society that touch on issues
20 of the definition of gender and sex are --- we should
21 consider more accurate or reliable than earlier
22 statements?

23 ATTORNEY BORELLI: Objection, form.

24 THE WITNESS: In the correct context,

1 yes. Sometimes when they're taken out of context and
2 applied to not the exact same population, they may or
3 may not be as precise.

4 BY ATTORNEY BROOKS:

5 Q. They may or may not be. That is you don't
6 maintain that generally more recent statements of the
7 Endocrine Society relating to definitions of gender and
8 sex are more reliable than earlier statements?

9 ATTORNEY BORELLI: Objection to form.

10 THE WITNESS: Their goal and our goal as
11 a community is to be as precise as possible. Sometimes
12 that works and sometimes it doesn't.

13 ATTORNEY BROOKS: Let me mark as Exhibit
14 --- what are we at, 6. Exhibit 6. What is tab 4 in the
15 materials provided to the court reporter, an article
16 Lapinski, et al., which Dr. Adkins is a coauthor from
17 2017. Pardon me, 2017.

18 ---

19 (Whereupon, Adkins Exhibit 6, 2017
20 Lapinski Article, was marked for
21 identification.)

22 ---

23 BY ATTORNEY BROOKS:

24 Q. And this is your only or perhaps one of only two

1 peer reviewed articles on which you were an author that
2 relate to transgender patients.

3 Correct?

4 ATTORNEY BORELLI: Objection, form.

5 THE WITNESS: I'm going to refer back to
6 my ---.

7 BY ATTORNEY BROOKS:

8 Q. Please do, and that's Exhibit 2.

9 A. I apologize --- I'm sorry. I was thinking of
10 the book chapter. Yes, I was thinking of the book
11 chapter I've written there. So those are also peer
12 reviewed. So if you just falling manuscript of joint
13 articles, that's true, but I also have one book chapter
14 published and one that is in process.

15 Q. Well, at any rate, this article was published in
16 2017, the same year as the more recent guidelines from
17 the Endocrine Society.

18 Correct?

19 A. Correct.

20 Q. And in this article --- let me ask you to turn
21 to page 692. And looking at a paragraph that actually
22 runs over from 689 because of a long intervening table.
23 Paragraph is headed understanding the meaning of
24 transitioning for transgender patients.

1 Do you see that?

2 A. Yes.

3 Q. And the paragraph continues on to page 692 and
4 the language I want to call your attention to is there,
5 but of course feel free to look at the paragraph?

6 ATTORNEY BORELLI: Counsel, for clarity
7 of the record, I'm showing that the heading is on page
8 689.

9 ATTORNEY BROOKS: Correct. That's where
10 the paragraph begins and then there's a two-page table
11 breaks up the paragraph and now we're on 692.

12 ATTORNEY BORELLI: Thank you.

13 THE WITNESS: Just that paragraph.

14 BY ATTORNEY BROOKS:

15 Q. Yes.

16 A. Okay.

17 Q. In 2017, writing a guide for clinicians as to
18 what you considered to be best practices in transgender
19 health you and your coauthors thought that it was clear
20 and useful to refer to, quote, the opposite biological
21 sex, closed quote, did you not?

22 ATTORNEY BORELLI: Objection, form.

23 THE WITNESS: The language would be
24 reflective of the original publications.

1 BY ATTORNEY BROOKS:

2 Q. Dr. Adkins, what do you mean by that answer?

3 A. When you're putting something into a journal
4 article and you're reporting that original article's
5 information, it would be inappropriate to change the
6 language. So the original report that states this
7 particular information used those words.

8 Q. Well, you didn't put this in quotation marks in
9 your article, did you?

10 ATTORNEY BORELLI: Objection, form.

11 THE WITNESS: We don't necessarily have
12 to put them in quotation marks. In medically referred
13 journals you can just put the reference.

14 BY ATTORNEY BROOKS:

15 Q. And in fact, there is no footnote to this, is
16 there, there is no reference?

17 ATTORNEY BORELLI: Objection, form.

18 THE WITNESS: Not right at the end of
19 that sentence.

20 BY ATTORNEY BROOKS:

21 Q. What that sentence says to get it into the
22 record, I'm referring to sexual orientation, it says,
23 quote, this fluctuation tends to occur more commonly
24 with individuals who are attracted to the opposite

1 biological sex before transitioning, closed quotes.

2 Have I read that language correctly?

3 A. Correct.

4 Q. And publishing this guideline for clinicians in
5 2017, is it your testimony that even if you thought that
6 language was inaccurate and confusing you would not have
7 clarified it?

8 ATTORNEY BORELLI: Objection, form.

9 THE WITNESS: I can't change what the
10 publication states. It would be inappropriate for me to
11 make a statement that was different from what the
12 publication states. And there are people that fall on
13 the binary and people who fall in the middle, and that
14 particular study investigated people who identified on
15 each end of the binary spectrum of individuals
16 identification of gender identity.

17 BY ATTORNEY BROOKS:

18 Q. So you believe as a scientist and an author that
19 writing in 2017, even if you thought the term biological
20 sex was misleading and inaccurate, you --- it was
21 nevertheless appropriate for you to use that term in a
22 best practices guide that you were writing for
23 clinicians?

24 ATTORNEY BORELLI: Objection, form.

1 THE WITNESS: So if you would read the
2 entirety of the article, I would hope that we would be
3 clear and it would be understood in that isolated
4 paragraph, again I, have to use what language was used
5 in the original publication. Otherwise, I'm
6 misrepresenting the original publication and I would not
7 want to do that.

8 BY ATTORNEY BROOKS:

9 Q. Well, if you thought the original publication
10 was inaccurate and misleading you wouldn't want to cite
11 and rely on it, would you?

12 ATTORNEY BORELLI: Objection, form.

13 THE WITNESS: As it's stated, it's not
14 inaccurate. And if you infer things from a sentence it
15 could be misleading. If you read it straight for what
16 it says, it's accurate to what the report gave in the
17 initial publication.

18 BY ATTORNEY BROOKS:

19 Q. Are you familiar, Dr. Adkins, with a NIH policy
20 that requires research supported by NIH grants that
21 involves animal or human clinical work to consider what
22 NIH refers to as, quote, sex as a biological variable,
23 closed quote?

24 ATTORNEY BORELLI: Objection, form.

1 THE WITNESS:S I have seen that policy
2 and also seen the policies that are presented by the NIH
3 which uses sex assigned at birth as well as gender
4 identity and in addition, as variables that should be
5 included in their research.

6 BY ATTORNEY BROOKS:

7 Q. My question is precise. Are you familiar with
8 the NIH policy that requires grant supported research in
9 sales or clinical work to, quote, consider sex as a
10 biological variable?

11 ATTORNEY BORELLI: Objection, form.
12 Counsel, if you are going to continue questioning her
13 about the policy, we'd request a copy be placed in front
14 of the witness.

15 ATTORNEY BROOKS: At the moment I'm just
16 asking the witness if she's familiar with that policy.

17 ATTORNEY BORELLI: My objection stands.

18 THE WITNESS: I haven't read the entire
19 policy. I have seen that within the documents that you
20 have presented, so I can't accurately state if it is
21 true.

22 BY ATTORNEY BROOKS:

23 Q. Have you, yourself, ever submitted any grant
24 proposal that was subject to that NIH policy?

1 ATTORNEY BORELLI: Objection, form.

2 THE WITNESS: I have submitted NIH
3 grants.

4 BY ATTORNEY BROOKS:

5 Q. And in that connection did you take some steps
6 to assure that your grant proposal would comply with
7 that policy?

8 ATTORNEY BORELLI: Objection, form.

9 THE WITNESS: All of my grants
10 applications had sex assigned at birth as a variable
11 that we report.

12 BY ATTORNEY BROOKS:

13 Q. Let me show you another more recent Endocrine
14 Society policy statement. This is tab eight. It will
15 be Exhibit 7.

16 ---

17 (Whereupon, Adkins Exhibit 7, 2021
18 Endocrine Society Scientific Statement,
19 was marked for identification.)

20 ---

21 THE WITNESS: Before we start this
22 questioning is it possible for me to take a break?

23 ATTORNEY BROOKS: It certainly is. At
24 any time that you want to, you just say so.

1 VIDEOGRAPHER: Going off the record. The
2 current time reads 10:08 a.m.

3 OFF VIDEO

4 ---

5 (WHEREUPON, A PAUSE IN THE RECORD WAS HELD.)

6 ---

7 ON VIDEOTAPE

8 VIDEOGRAPHER: We're back on the record.

9 Current time reads 10:21 a.m. Eastern Standard Time.

10 ATTORNEY BROOKS: And this is Roger
11 Brooks resuming the questioning. I have put in front of
12 the witness what is marked Exhibit 7, which is a, quote,
13 scientific statement from the Endocrine Society that is
14 entitled Considering Sex as a Biological Variable in
15 Basic and Clinical Studies: An Endocrine Society
16 Scientific Statement, closed quote. Do you see that?

17 A. Pardon me. Yes.

18 Q. So this is --- document, this statement is from
19 2021, just last year. And four more years --- recent
20 four more years of science available as compared to the
21 2017 guidelines we looked at earlier.

22 Correct?

23 A. It is that --- yes, as far as the date goes, I
24 mean, one would think they would be up-to-date.

1 Q. And let me just ask, obviously the Endocrine
2 Society is a large organization, but do you know, either
3 personally or by reputation, any of the authors listed
4 on this document?

5 ATTORNEY BORELLI: Objection, form.

6 THE WITNESS: Excuse me. Walter Miller
7 by reputation.

8 BY ATTORNEY BROOKS:

9 Q. And Walter Miller is at the University of
10 California, San Francisco, according to the footnote
11 there?

12 A. Let's see. That's what it looks like.

13 Q. And just looking down, the University of
14 California, San Francisco, is a highly prestigious
15 research institution, is it not?

16 A. It has a good reputation.

17 Q. And farther down, halfway down the block of
18 institutions that these authors are associated with, I
19 see University of California, Los Angeles. Do you see
20 that?

21 A. Yes.

22 Q. And UCLA, to use its abbreviation, is also a
23 highly respected research university, is it not?

24 A. You know, there is some variability there. And

1 yes, there are some folks there who do a nice job.

2 Q. And maybe four lines from the bottom of that
3 block I see a reference to the National Institute of
4 Mental Health.

5 Do you see that?

6 A. Yes.

7 Q. And that's a highly respected governmental
8 research laboratory.

9 Correct?

10 ATTORNEY BORELLI: Objection, form.

11 THE WITNESS: Yes.

12 BY ATTORNEY BROOKS:

13 Q. And let me ask you to turn here in this document
14 to the second page, which is page 220. And this is, in
15 fact, the beginning of the text after the abstract on
16 the previous page. And there it begins, quote, sex is
17 an important biological variable that must be considered
18 in the design and analysis of human and animal research.
19 The terms sex and gender should not be used
20 interchangeably. Sex is dichotomous with sex
21 determination in the fertilized zygotes stemming from
22 unequal expression of sex chromosomal genes, closed
23 quote.

24 Do you see that language?

1 A. I do.

2 Q. Do you understand the meaning of the word
3 dichotomous?

4 A. I do.

5 Q. What does it mean?

6 A. Two options.

7 Q. There are two options. And do you think you
8 understand the significance of the statement that,
9 quote, sex is an important biological variable?

10 ATTORNEY BORELLI: Objection, form.

11 THE WITNESS: I understand that it ---
12 yes.

13 BY ATTORNEY BROOKS:

14 Q. In fact, I believe you testified earlier that in
15 the human body every body part, every cell either has XX
16 chromosomes or XY chromosomes depending on the
17 chromosomal sex of the individual.

18 Is that right?

19 ATTORNEY BORELLI: Objection, form.

20 THE WITNESS: Some individuals have a
21 mixture.

22 BY ATTORNEY BROOKS:

23 Q. And those would be genetic abnormalities.

24 Am I correct?

1 ATTORNEY BORELLI: Objection, form.

2 THE WITNESS: Again, I don't like the
3 word abnormalities. It is a variation in presentation
4 of a human.

5 BY ATTORNEY BROOKS:

6 Q. You would agree, would you not, that any
7 deviation from having either XX or XY chromosomes is
8 widely considered to be an abnormality?

9 ATTORNEY BORELLI: Objection, form.

10 THE WITNESS: Again, I don't prefer that
11 language.

12 BY ATTORNEY BROOKS:

13 Q. Dr. Adkins, I didn't ask you what you prefer. I
14 understand your preference. My question is you would
15 agree, would you not, within the scientific community it
16 is widely held view that any chromosomal arrangement
17 other than having XX or XY is abnormal?

18 ATTORNEY BORELLI: Objection, form.

19 THE WITNESS: Not in my experience in my
20 group of people that I practice with, they would not
21 describe it that way.

22 BY ATTORNEY BROOKS:

23 Q. Would you agree that sex is determined to use
24 the language that I have directed you to, quote, in the

1 fertilized zygote, closed quote?

2 A. I'm sorry. Can you re-read the question or
3 repeat the question?

4 Q. Yes. I'm referring to the language that
5 references sex determination in the fertilized zygote.
6 And my question is do you agree that the sex of an
7 individual is determined, quote, in the fertilized
8 zygote, closed quote?

9 ATTORNEY BORELLI: Objection, form.

10 THE WITNESS: Again, they're not being
11 very specific in that particular sentence about what
12 they mean by sex.

13 BY ATTORNEY BROOKS:

14 Q. You're not able to say whether this opening
15 language in this 2021 statement from the Endocrine
16 Society is in your view accurate or inaccurate?

17 ATTORNEY BORELLI: Objection to form.

18 THE WITNESS: Taking one statement, I
19 can't. This is a very long document.

20 BY ATTORNEY BROOKS:

21 Q. I'm asking you now, do you agree or disagree the
22 sex is determined in the fertilized zygote?

23 ATTORNEY BORELLI: Objection, form.

24 THE WITNESS: XX and XY components are

1 determined in fertilized zygote. That doesn't
2 necessarily equal sex that's assigned at birth.

3 BY ATTORNEY BROOKS:

4 Q. Absent any disorder of sexual development, the
5 determination the zygote that you just described will,
6 in fact, dictate 100 percent reliability the sex
7 observed at birth.

8 Correct?

9 ATTORNEY BORELLI: Objection, form.

10 THE WITNESS: Well, I can't --- you know,
11 in medicine we don't say anything is 100 percent. If
12 you use the absent any --- any difference of sex
13 development even an unknown one that we might not know
14 about, that --- that is what we know to be true.

15 BY ATTORNEY BROOKS:

16 Q. You mentioned earlier that dichotomous means
17 there are two alternatives and only two alternatives.

18 Right?

19 ATTORNEY BORELLI: Objection, form.

20 BY ATTORNEY BROOKS:

21 Q. That's just what the word means?

22 ATTORNEY BORELLI: Same objection.

23 THE WITNESS: That's what the word means.

24 BY ATTORNEY BROOKS:

1 Q. And in this important statement from the
2 Endocrine Society published just last year drafted by a
3 whole committee of prominent endocrinologists they say
4 that sex is an important biological variable, closed
5 quote. Do you disagree with this statement from the
6 Endocrine Society?

7 ATTORNEY BORELLI: Objection, form.

8 THE WITNESS: In reading that particular
9 statement I would agree if they had used the word sex
10 assigned at birth or something more precise in that
11 sentence.

12 BY ATTORNEY BROOKS:

13 Q. Well, what they said precisely is sex is a
14 biological variable. Do you see that language?

15 A. Yeah.

16 Q. Do you agree with that?

17 ATTORNEY BORELLI: Objection, form.

18 THE WITNESS: So in the context of
19 medicine, when we're talking about sex and we're talking
20 about --- that's very imprecise. I really think that it
21 is --- I would --- it's hard for me to use that word
22 because it is imprecise, as I have mentioned before.

23 BY ATTORNEY BROOKS:

24 Q. So you think this statement from last year from

1 the Endocrine Society in its opening language is so
2 imprecise that you can't tell me whether you think it is
3 accurate or not?

4 ATTORNEY BORELLI: Objection, form.

5 THE WITNESS: I would have to read the
6 entirety of the report and take it within context as I
7 would with any other language used.

8 BY ATTORNEY BROOKS:

9 Q. Sitting here right now, you're unable to answer
10 my question as to whether you think it is an accurate
11 statement that sex is a biological concept?

12 ATTORNEY BORELLI: Objection, form.

13 THE WITNESS: Sex is a biological
14 concept, yes.

15 BY ATTORNEY BROOKS:

16 Q. And let me take you, in fact, to page 221 of
17 this document, first column. And there you will see a
18 heading that begins biological sex, the definition of
19 male and female.

20 Do you see that?

21 A. Yes.

22 Q. And it begins sex is a biological concept. And
23 you just said that you think that's a scientifically
24 true statement.

1 Right?

2 ATTORNEY BORELLI: Objection, form.

3 Could --- could she have an opportunity to read this
4 section before we continue questioning?

5 ATTORNEY BROOKS: Yes. But I'll ask you
6 not to coach the witness. I have not denied any
7 requests, but the witness should make them, not counsel.

8 ATTORNEY BORELLI: The objection stands.
9 It is appropriate to ask that a witness be able to read
10 a section of a document before being asked to opine
11 about the larger meaning of the document.

12 ATTORNEY BROOKS: I believe the witness
13 threw some more language in this paragraph so that's a
14 good idea.

15 BY ATTORNEY BROOKS:

16 Q. If you will tell us when you have read that
17 paragraph.

18 A. Yes. Sorry.

19 Q. You have?

20 A. No, I will tell you.

21 ATTORNEY TYRON: Jake, could you scroll
22 down a bit, please?

23 THE WITNESS: Okay.

24 BY ATTORNEY BROOKS:

1 Q. In the first paragraph under the heading
2 biological sex, directing your attention to the
3 statement did you discuss the statement sex is a
4 biological concept. Do you see that language?

5 A. I do.

6 Q. And you believe that to be a scientifically
7 accurate statement?

8 ATTORNEY BORELLI: Objection to form.

9 THE WITNESS: Yes.

10 BY ATTORNEY BROOKS:

11 Q. And in the next sentence this Endocrine Society
12 statement tells us that, quote, all mammals have two
13 distinct sexes, closed quote. Do you believe that is
14 true or scientifically inaccurate?

15 ATTORNEY BORELLI: Objection, form.

16 THE WITNESS: Excuse me. I'm sorry. I'm
17 trying to find that language.

18 BY ATTORNEY BROOKS:

19 Q. Third line of that paragraph, all mammals have
20 two distinct sexes. My question is do you believe that
21 is inaccurate or accurate scientific ---?

22 ATTORNEY BORELLI: Objection, form.

23 THE WITNESS: I still think it is
24 imprecise.

1 BY ATTORNEY BROOKS:

2 Q. Have you finished your answer?

3 A. Yes. Sorry. My allergies are making me ---.

4 Q. Any time you need a drink.

5 A. Yeah. Sorry about that.

6 Q. Few lines down it says, quote, the classical
7 biological definition of the two sexes is that females
8 have ovaries and make larger female gametes, eggs,
9 whereas the males have testes and male smaller gametes,
10 sperm. Do you see that language?

11 A. I do.

12 Q. Do you agree that is a fair statement of the
13 classical biological definition of the two sexes?

14 ATTORNEY BORELLI: Objection, form.

15 THE WITNESS: When you use the word
16 classical it describes what you would see typically, so
17 I agree with that statement. It allows for there to be
18 some variations that may not be classical.

19 BY ATTORNEY BROOKS:

20 Q. And it is accepted as a classical definition
21 because it is accurate in the overwhelming percentage of
22 cases.

23 Is that true?

24 ATTORNEY BORELLI: Objection, form.

1 THE WITNESS: So you know, as I mentioned
2 before in my papers that I submitted, it --- you know,
3 the percentage of people with differences of sex
4 development is low and those would be the individuals
5 that would not follow typically within this.

6 BY ATTORNEY BROOKS:

7 Q. And those individuals are the overwhelming
8 majority.

9 Correct?

10 ATTORNEY BORELLI: Objection, form.

11 THE WITNESS: They are the majority.

12 BY ATTORNEY BROOKS:

13 Q. Well more than 99 percent.

14 Correct?

15 ATTORNEY BORELLI: Objection, form.

16 THE WITNESS: I would have to do the math
17 but that sounds accurate.

18 BY ATTORNEY BROOKS:

19 Q. Let me ask you to turn to page 228. In the
20 second column, the final paragraph begins on that page,
21 it reads, quote, sex is an essential part of vertebrate
22 biology, but gender is a human phenomenon, semicolon.
23 Sex often influences gender, but gender cannot influence
24 sex. Do you see that language.

1 A. What is the first word in the sentence again so
2 I can find it?

3 Q. It's on the second column, the final paragraph.

4 A. Okay.

5 Q. I'm really just calling your attention to the
6 first sentence.

7 A. Yep, read it.

8 Q. Is there anything in that sentence that you
9 believe to be inaccurate scientifically?

10 ATTORNEY BORELLI: Objection, form.

11 THE WITNESS: Again, I think they're
12 imprecise as primates have gender roles and gendered
13 activity, so it's not exactly precise.

14 BY ATTORNEY BROOKS:

15 Q. Anything else about that statement that you want
16 to say is less than scientifically accurate?

17 ATTORNEY BORELLI: Objection, form.

18 THE WITNESS: You know, again they use
19 the word sex without being very specific as to sex
20 assigned at birth. That's my only other caveat.

21 BY ATTORNEY BROOKS:

22 Q. If we read that to refer to what the Endocrine
23 Society determined used in the 2017 Endocrine Society
24 statement that we looked at, that is, quote,

1 genetic/gonadal sex, then do you you consider this
2 statement to be accurate?

3 ATTORNEY BORELLI: Objection, form.

4 THE WITNESS: That's not what it says, so
5 I'll ask you to repeat the question for me.

6 BY ATTORNEY BROOKS:

7 Q. If we assume hypothetically --- I will ask you
8 to assume that sex as used in this Endocrine Society
9 2021 document, has the meaning that you, in fact,
10 explained from the term used in the 2017 Endocrine
11 Society document that is, quote, genetic/gonadal sex,
12 closed quote, then you believe this to be --- the
13 language that I have read to you from the 2021 document
14 to be accurate?

15 ATTORNEY BORELLI: Objection, form.

16 THE WITNESS: So I believe when I
17 answered that question --- I believe when I answered
18 that question sex, gonadal, you know, those are two
19 parts of it. They have not included the full range of
20 hormonal or external genitalia to be specific. In my
21 line of work I would need all of that information to
22 really pin down things.

23 BY ATTORNEY BROOKS:

24 Q. So your testimony now is that the term

1 genetic/gonadal '17 guidelines is too imprecise for you
2 really to understand?

3 ATTORNEY BORELLI: Objection, form.

4 THE WITNESS: I think you asked that
5 question before.

6 BY ATTORNEY BROOKS:

7 Q. And I thought you had said you did understand.
8 You seem to be changing your testimony.

9 ATTORNEY BORELLI: Objection.

10 THE WITNESS: You can read it back to me
11 if you --- I think that there's multiple things that are
12 left out of that particular phrase to describe, you
13 know, individuals. I can't say something that is, you
14 know, in my experience and in the literature and in
15 patients with intersex conditions that are --- that
16 could be different from that. There --- yeah.

17 BY ATTORNEY BROOKS:

18 Q. If we for a moment focus on individuals who do
19 not suffer from any disorder of sexual development, then
20 do you believe the following quote from Endocrine
21 Society 2021 document is true, and that is, quote, sex
22 is an essential part of vertebrate biology, but gender
23 is a human phenomenon, semicolon, sex often influences
24 gender, comma, but gender cannot influence sex, closed

1 quote?

2 ATTORNEY BORELLI: Objection, form.

3 THE WITNESS: Trying to think, make sure
4 --- I can't think of an instance right now that makes me
5 disagree with that statement.

6 BY ATTORNEY BROOKS:

7 Q. Let me take you to the first column on page 228
8 and there's a heading there that says considering sex
9 and/or gender as variables in health and disease.

10 Do you see that?

11 A. No. What page are you on?

12 Q. 228 ---

13 A. Yes.

14 Q. --- first column, the heading towards the bottom
15 of the page.

16 A. Okay.

17 Q. And here they're specifically mentioning sex on
18 one hand and gender on the other. Do you see that?
19 This paragraph begins, quote, women and men differ in
20 many physiological and psychological variables.

21 Do you see that?

22 A. Yes.

23 Q. Do you believe that to be a scientifically
24 accurate statement?

1 ATTORNEY BORELLI: Objection, form.

2 THE WITNESS: I think if I were to add
3 typical, it's saying there is variability.

4 BY ATTORNEY BROOKS:

5 Q. Well, it is saying specifically that women and
6 men differ from each other in physiological and
7 psychological ways.

8 Correct?

9 ATTORNEY BORELLI: Objection, form.

10 THE WITNESS: That's what it says.

11 BY ATTORNEY BROOKS:

12 Q. And do you believe that to be a scientifically
13 true statement?

14 ATTORNEY BORELLI: Objection, form.

15 THE WITNESS: Again, you know, you have
16 to interpret these in their context of what they are
17 saying. Statements.

18 BY ATTORNEY BROOKS:

19 Q. Do you believe it to be true or false that women
20 and men differ in many physiological and psychological
21 variables?

22 ATTORNEY BORELLI: Objection, form.

23 THE WITNESS: All people are different.

24 BY ATTORNEY BROOKS:

1 Q. Dr. Adkins, do you believe it to be true or
2 false that women and men as women and men differ from
3 each other in many physiological and psychological
4 variables?

5 ATTORNEY BORELLI: Objection to the form.

6 THE WITNESS: So women and men are a
7 gender assignment, not the biological sex which you
8 mentioned before. And gender is not necessarily a way
9 that I would necessarily think is a scientifically
10 precise way to place that if you're talking about this
11 particular statement.

12 BY ATTORNEY BROOKS:

13 Q. Is it your belief that the Endocrine Society in
14 this document in the terms women and men is referring to
15 gender identity other than biological --- what does the
16 word physiological mean to you as a doctor?

17 A. The method of function and interaction of all
18 the parts of the body.

19 Q. It refers to biology, not to the statement of
20 mind or identity.

21 Correct?

22 ATTORNEY BORELLI: Objection to form.

23 THE WITNESS: I would just agree with
24 that statement.

1 BY ATTORNEY BROOKS:

2 Q. Let me ask you to turn to page 229.

3 Q. The first full paragraph begins, quote, despite
4 the fact that biological sex is such a fundamental
5 source of interest specific variation in anatomy and
6 physiology, much basic and clinical science has tended o
7 focus studies on one sex, typically male, closed quote.

8 Do you see that language?

9 A. I do.

10 Q. And do you understand what is meant by
11 intraspecific variation? Let me offer a suggestion. Do
12 you understand it to refer to variations within the
13 human species?

14 ATTORNEY BORELLI: Objection to form.

15 THE WITNESS: I think you know again in
16 context I would need to intraspecific --- intraspecific
17 could be between me and you. Isolated in this one
18 sentence, I would need to take a moment to see if it
19 better explains it if I were to read further.

20 BY ATTORNEY BROOKS:

21 Q. Do you disagree or agree that biological sex is
22 a fundamental source of variation in anatomy and
23 physiology within the human species?

24 ATTORNEY BORELLI: Objection, form.

1 THE WITNESS: I'm sorry. I got
2 sidetracked in my brain. Could you please read the
3 question?

4 BY ATTORNEY BROOKS:

5 Q. Yes, I can. Do you agree or disagree that
6 biological sex is the fundamental source of variation in
7 anatomy and physiology within the human cease species?

8 ATTORNEY BORELLI: Objection, form.

9 THE WITNESS: There is lots of other
10 parts of physiology that are completely unrelated to
11 your reproductive system that is more fundamental.

12 BY ATTORNEY BROOKS:

13 Q. Dr. Adkins, do you agree or disagree that
14 biological sex is a fundamental source of variation in
15 anatomy and physiology with human species?

16 ATTORNEY BORELLI: Objection, form.

17 THE WITNESS: It is one of the variables
18 within variations.

19 ATTORNEY BROOKS: Let me mark as Exhibit
20 8 an infographic, if I can use that term. Exhibit 8?

21 VIDEOGRAPHER: Excuse me, Counsel. You
22 cut out right after Exhibit 8. I didn't hear which
23 document that was.

24 ATTORNEY BROOKS: It is tab 9 and it is a

1 one page infographic, if I may, put out by the National
2 Institute of Health titled How Sex and Gender Influence
3 Sex and Disease.

4 ---

5 (Whereupon, Adkins Exhibit 8, NIH
6 Sex/Gender Infographic, was marked for
7 identification.)

8 ---

9 BY ATTORNEY BROOKS:

10 Q. And first let me ask, Dr. Adkins, are you
11 familiar with the National Institute of Health as an
12 organizations?

13 A. Yes.

14 Q. That is a government research institute?

15 A. Yes.

16 Q. And major grant --- major source of grants,
17 grant making in the health sciences?

18 A. Yes.

19 Q. And are you --- were you aware that it has
20 within it an Office of Research on Women's Health?

21 A. No.

22 Q. Do you see that this is published by the
23 National Institute of Health, Office of Research on
24 Women's Health?

1 A. Okay.

2 Q. In the box at the top it says, and I quote, sex
3 is a biological classification included in our DNA.
4 Males have XY chromosomes and females have XX
5 chromosomes. Sex makes us male or female. Do you see
6 that language?

7 A. I do.

8 Q. And it continues, every cell in your body has a
9 sex making up tissues and organs like your skin, brain,
10 heart and stomach. Each cell is either male or female
11 depending on whether you are a man or a woman, closed
12 quote.

13 Do you see that?

14 A. I do.

15 Q. And then it continues under that with a
16 definition of gender. So my question is --- begins
17 here, the opening statement in this NIH publication says
18 that sex is a biological classification. Do you agree
19 or disagree with that?

20 ATTORNEY BORELLI: Objection, form.

21 THE WITNESS: You know, there is a whole
22 literature on --- on this --- the differences in --- in
23 sex. I --- so biological as opposed to another type of
24 classification, I agree with that statement.

1 BY ATTORNEY BROOKS:

2 Q. It says a little further along that, quote,
3 every cell in your body has a sex, closed quote. Do you
4 agree or disagree with that?

5 ATTORNEY BORELLI: Objection to the form.

6 THE WITNESS: I agree. And each cell can
7 be different.

8 BY ATTORNEY BROOKS:

9 Q. Are you saying that within an individual --- a
10 specific individual each cell can have a different sex?

11 A. Yes.

12 Q. This NIH publication tells us that, quote, each
13 cell is either male or female, closed quote. And I take
14 it you simply believe the NIH is wrong about that?

15 ATTORNEY BORELLI: Objection, form.

16 THE WITNESS: I think that the nuances
17 are something that you can't publish in a one-page
18 documentation when they're not talking about an entire
19 population.

20 BY ATTORNEY BROOKS:

21 Q. Under this initial box is a heading that says
22 examples of sex and gender influences. Do you see that?

23 A. I do.

24 Q. And it has various categories of things that may

1 be influenced on one end by sex, which is defined in
2 this document as a biological classification, and
3 gender. Do you see that structure of this document?

4 ATTORNEY BORELLI: Objection, form.

5 THE WITNESS: Yeah.

6 BY ATTORNEY BROOKS:

7 Q. And it says if we go down to cardiovascular risk
8 one of the differences that is identified as based on
9 sex is that, quote, blood vessels in a woman's heart are
10 smaller in diameter and much more intricately branched
11 than those of a man, closed quote. Do you see that?

12 A. Under cardiovascular risk, yeah. Okay.

13 Q. And the NIH gives this as an example of a
14 physical measurable biological difference that depends
15 on biological sex.

16 Correct?

17 ATTORNEY BORELLI: Objection, form.

18 THE WITNESS: Well, actually the words
19 they're using are gender --- gender words, not the words
20 we would use for sex, you know, female or male or a
21 variation in between. So I would --- if I were editing
22 this document, I probably wouldn't have used the word
23 woman.

24 BY ATTORNEY BROOKS:

1 Q. You would have said a female?

2 A. Typical female.

3 Q. Because what --- how the blood vessels in your
4 heart are structured depend on your sex, not on your
5 gender identity. Am I correct?

6 ATTORNEY BORELLI: Objection, form.

7 THE WITNESS: There is many variables
8 that can affect these things and what --- that is one of
9 them.

10 BY ATTORNEY BROOKS:

11 Q. To your knowledge, gender identity is not a
12 variable that affects how the blood vessels in one's
13 heart are structured, does it?

14 ATTORNEY BORELLI: Objection, form.

15 THE WITNESS: Not that I'm aware of.

16 BY ATTORNEY BROOKS:

17 Q. Under the last item here is knee arthritis. Do
18 you see that heading?

19 A. Yes.

20 Q. I'm sure we'll have the same terminology
21 discussion, but the language there says, quote, women
22 and girls are more likely to injure their knees when
23 playing sports, closed quote. Do you see that language?

24 A. I do.

1 Q. And if we use the term --- substitute the term
2 females for women and girls and say females are more
3 likely to injure their knees when playing sports, do you
4 believe that to be a scientifically accurate statement?

5 ATTORNEY BORELLI: Objection to form.

6 THE WITNESS: You have to leave some
7 room. Again, in medicine we're not like 100 percent.
8 But I agree that portions of females that are typical in
9 research have been reported to have more frequent knee
10 injuries.

11 BY ATTORNEY BROOKS:

12 Q. Okay.

13 Let me ask you to find your report, Exhibit 1,
14 and let's turn to paragraph 15. And there you wrote,
15 quote, a person's gender identity refers to a person's
16 inner sense of belonging to a particular gender such as
17 male or female. And you continue every one has a gender
18 identity, closed quote. Do you see that language?

19 A. I do.

20 Q. Let me direct your attention to the Endocrine
21 Society guidelines from 2007, which is Exhibit 4. And
22 we're going to come back --- if you can make a stack of
23 most of these, but the 2017 guidelines we will come back
24 to with some frequency. But we're ---

1 A. Keeping it on top?

2 Q. --- keeping it on top.

3 A. Okay.

4 Q. And there I want to call your attention to page
5 3873.

6 A. 3873.

7 Q. Right. And in the second column there's a
8 section headed introduction. And it begins with a
9 historical review of the concept of gender. And I'm
10 going to ask you a question beginning with the language
11 that is two inches from the bottom, two and a half
12 inches from the bottom that begins these early
13 researchers. So if you want to kind of glide through
14 what comes before that, let me know and I'll begin my
15 questioning.

16 A. Yes, I'll look over it. Thank you.

17 I have read that section.

18 Q. I want to call your attention to a sentence
19 which my understanding is contrasting against or the
20 history that begins, quote, some experience themselves
21 as having both a male and female gender identity whereas
22 others completely renounce any gender classification,
23 closed quote. Do you see that language?

24 A. I do.

1 Q. And in your expert opinion, is that an accurate
2 statement?

3 ATTORNEY BORELLI: Objection, form.

4 THE WITNESS: In my clinical experience I
5 have met individuals who are --- identify as agender
6 which would in my mind be similar to this definition,
7 but I typically ask the patient what their gender means
8 to them.

9 BY ATTORNEY BROOKS:

10 Q. Well, do you have any opinion as to whether some
11 individuals experience both a male and female gender
12 identity?

13 ATTORNEY BORELLI: Objection, form.

14 THE WITNESS: I have patients that do
15 that, yes.

16 BY ATTORNEY BROOKS:

17 Q. And I think you said that --- I don't want to
18 puts words in your mouth. Do you have an opinion
19 whether some individuals report not having any gender,
20 not fitting any gender classification?

21 ATTORNEY BORELLI: Objection, form.

22 THE WITNESS: I do have patients that
23 match that description.

24 BY ATTORNEY BROOKS:

1 Q. And this goes on the next sentence to say,
2 quote, there are also reports of individuals
3 experiencing a continuous and rapid involuntary
4 alternation between a male and female identity, closed
5 quote.

6 Do you see that?

7 A. I do.

8 Q. And do you believe that to be an accurate
9 statement?

10 ATTORNEY BORELLI: Objection, form.

11 THE WITNESS: I have not had that
12 clinical experience. I would have to rely on the, you
13 know, medical report with that in particular, and I
14 would probably look at the evidence that was available
15 ---

16 BY ATTORNEY BROOKS:

17 Q. Well ---

18 A. --- prior to making a decision.

19 Q. --- do you as a practitioner consider it
20 reasonable to rely on that assertion in this 2017
21 Endocrine Society statement guideline?

22 ATTORNEY BORELLI: Objection, form.

23 THE WITNESS: I would rely on it to be
24 something I should at least consider.

1 ATTORNEY BROOKS: Let me mark as Exhibit
2 9 what is tab 10, and that is a one-page statement from
3 a World Health Organization's website titled Gender and
4 Health.

5 ---

6 (Whereupon, Adkins Exhibit 9, World
7 Health Organization Webpage, was marked
8 for identification.)

9 ---

10 THE WITNESS: Thank you.

11 BY ATTORNEY BROOKS:

12 Q. Are you familiar with the World Health
13 Organization as an organization?

14 A. I am.

15 Q. And do you consider the World Health
16 Organization to be generally a respected source of
17 information on medical and health topics?

18 ATTORNEY BORELLI: Objection to form.

19 THE WITNESS: My general experience so
20 far to date is they're reliable.

21 BY ATTORNEY BROOKS:

22 Q. Well, I will represent to you that this document
23 came off of a World Health Organization website and the
24 web address is at the bottom of the page. I see on the

1 copy in front of you --- I'll stand by my representation
2 of why mine has it ---.

3 A. Okay.

4 Q. This document titled Gender and Health begins
5 gender refers to the characteristics of women, men,
6 girls and boys that are socially constructed, closed
7 quote. Do you see that?

8 A. I do.

9 Q. And is that a definition of gender per se that's
10 consistent with how you are used to seeing the term
11 used?

12 ATTORNEY BORELLI: Objection, form.

13 THE WITNESS: So you know, social
14 constructs change regularly, so I would say that, you
15 know, that wouldn't be completely inclusive of current
16 socially constructed genders, in my experience.

17 BY ATTORNEY BROOKS:

18 Q. Well, let me direct --- why don't you read that
19 whole first paragraph, which is just three sentences,
20 because I think the World Health Organization raises
21 exactly that point. So I'll ask you to read that?

22 A. Sure. Sure.

23 ---

24 (WHEREUPON, WITNESS REVIEWS DOCUMENT.)

1

2

THE WITNESS: Okay.

3

BY ATTORNEY BROOKS:

4

Q. So extending into that paragraph, that

5

three-sentence paragraph, just that explanation of the

6

concept of gender fit with how you are used to seeing

7

the term used in your professional experience?

8

ATTORNEY BORELLI: Objection, form.

9

THE WITNESS: So in reading that, my

10

understanding of what they are using those specific

11

words, men, women, girls and boys are examples. They

12

don't comment on other societies. Just so --- in that

13

assessment, yes.

14

BY ATTORNEY BROOKS:

15

Q. All right.

16

If we skip down to the third paragraph it

17

begins gender interacts with but is different from sex,

18

which refers to the different biological and

19

psychological characteristics of females, males and

20

intersex persons, such as chromosomes, hormones and

21

reproductive organs, closed quote. Do you see that

22

language?

23

A. I would like to read it, too, though, if you

24

don't mind.

1 Q. Sure.

2 A. Yeah. Okay. I have read it.

3 Q. So first, backing up to the statement, opening
4 paragraph, that gender is socially constructed, do you
5 believe that to be an accurate statement?

6 ATTORNEY BORELLI: Objection, form.

7 THE WITNESS: Gender is a social
8 construct, yes.

9 BY ATTORNEY BROOKS:

10 Q. And then in the third paragraph it states that
11 gender identity refers to a person's deeply felt
12 internal and individual experience of gender. Do you
13 see that?

14 A. I do.

15 Q. So gender identity refers to an individual's
16 experience in relation to gender, which is a social
17 construct.

18 Right?

19 ATTORNEY BORELLI: Objection, form.

20 THE WITNESS: I see it, and I would ask
21 you to read the question one more time. I just want to
22 make sure I'm answering you accurately.

23 BY ATTORNEY BROOKS:

24 Q. As I think I see in this document really the

1 question is as you understand it ---.

2 A. I think that you have to also include ---.

3 COURT REPORTER: Excuse me. I need to
4 interrupt. Excuse me. I'm sorry to interrupt, but
5 Counsel, your full question didn't come through on this
6 end.

7 ATTORNEY BROOKS: I'll re-ask it. Pardon
8 me.

9 ATTORNEY BORELLI: Actually, why don't we
10 just address one housekeeping matter. Would you be able
11 to identify for the record the URL that appears on your
12 copy and whether there is a date of the document or date
13 of access just so we have it on the record?

14 ATTORNEY BROOKS: There is no date of
15 access. That access is within the last two months. The
16 address is
17 www.who.int/health-topics/gender#tabequalstab, underline
18 one.

19 ATTORNEY BORELLI: Thank you.

20 ATTORNEY BROOKS: I'm glad it wasn't one
21 of these four line ones.

22 BY ATTORNEY BROOKS:

23 Q. And I will re-ask my question.

24 A. Okay.

1 Q. The question is, Dr. Adkins, is it consistent
2 with your understanding that gender identity refers to a
3 person's individual experience of gender, which is in
4 turn a social construct?

5 ATTORNEY BORELLI: Objection, form.

6 THE WITNESS: That doesn't sound to me to
7 be a full explanation. Just doesn't sound accurate to
8 me. I'm having a hard time.

9 BY ATTORNEY BROOKS:

10 Q. Then let me not take more time on that.

11 A. Okay.

12 Q. You would agree that gender is a social
13 construct that can change over time.

14 Am I right?

15 ATTORNEY BORELLI: Objection, form.

16 THE WITNESS: Gender --- so it's a social
17 construct, it's true. Gender is, you know, how you ---
18 I mean, it's complicated. It involves more things than
19 --- and so, you know, if you're talking about gender
20 expression, that's different. Someone's gender as they
21 understand it for their gender identity is different. I
22 mean, I have patients who are assigned a particular sex
23 and the family and the physicians assign a gender that
24 is more typically correlated with that sex. And then

1 over time those individuals sometimes don't identify
2 with that gender, and they may change their gender
3 marker, for example, because their identity really just
4 doesn't match what we assigned them at birth. I'm not
5 sure how to give a clearer answer. I'm trying.

6 BY ATTORNEY BROOKS:

7 Q. Well, so if an individual comes into your office
8 and asserts a gender identity of, let's say, man or
9 both, either one of those, how can a clinician verify
10 whether that individual is accurately understanding his
11 own or their own subjective feelings?

12 ATTORNEY BORELLI: Objection, form.

13 THE WITNESS: And you know, a gender
14 again is something that's assigned at birth and it is
15 what you work with in your life, and so you know, I
16 would ask them and they could tell me how they were
17 proceeding in life with regard to their gender
18 behaviors. That would be how I would probably assess
19 their gender.

20 BY ATTORNEY BROOKS:

21 Q. How do you ascertain whether that individual who
22 claims identity of man or both is telling you, the
23 clinician, the truth?

24 ATTORNEY BORELLI: Objection, form.

1 THE WITNESS: So in general, you know,
2 in pediatrics we have a parental report, and it depends
3 on the clinical situation. We may or may not have
4 another health provider's report or a mental health
5 provider's report. If we have questions, we start to
6 dig deeper and look at other areas.

7 BY ATTORNEY BROOKS:

8 Q. Let me call your attention to paragraph 19 in
9 your expert report, Exhibit 1. And there you refer to
10 DSM-V definition of gender dysphoria.

11 Do you see that?

12 A. What paragraph?

13 Q. Paragraph 19?

14 A. Yeah.

15 Q. And you mention that among other things the
16 diagnostic criteria under DSM-V for gender dysphoria
17 includes, quote, clinically significant distress. Do
18 you see that?

19 A. I do.

20 Q. And in fact, it includes clinically significant
21 distress that, quote, impairs important areas of
22 functioning, closed quote.

23 Am I correct? Do you recall that in DSM-V?

24 ATTORNEY BORELLI: Objection. Objection

1 to form.

2 THE WITNESS: That is how I recall that.

3 BY ATTORNEY BROOKS:

4 Q. Paragraph right?

5 A. Yeah. I want to reserve the right to look at it
6 to be certain. That sounds correct to me at this
7 moment.

8 Q. And what does clinically significant distress
9 that impairs important areas of functioning look like in
10 a child?

11 ATTORNEY BORELLI: Objection, form.

12 THE WITNESS: Yeah. So you know, it
13 depends on what they are coming in with. I mean, for
14 some of my patients, you know, who are, you know,
15 hyperthyroid, for example, their brain's run really
16 fast, they can't focus during school, and that would be
17 impairment in their ability to do their main job, which
18 is to be in school and learn. So that's one area where
19 you can have some impairment in their --- it varies from
20 patient to patient and in each thing we're talking
21 about.

22 BY ATTORNEY BROOKS:

23 Q. The example you just gave was impairment
24 resulting from a hyperthyroid condition.

1 Am I correct?

2 A. Correct.

3 Q. What I asked was impairment due to ---
4 attributable to what gender dysphoria looks like in a
5 child.

6 A. Oh.

7 ATTORNEY BORELLI: I don't want to
8 interrupt. I think there may have been a misreading of
9 the language in the paragraph, and I just want to make
10 sure the record is correct that the final sentence of
11 that paragraph says in order to be diagnosed with gender
12 dysphoria, incongruence must persist for at least six
13 months and be accompanied by clinically significant
14 distress or impairment in social, occupational or other
15 important area of functioning.

16 BY ATTORNEY BROOKS:

17 Q. I, on the other hand, will ask a question that I
18 believe is more closely tracked to the DSM-V language,
19 which is what is clinically significant distress that
20 impairs important area of functioning look like in a
21 young child?

22 ATTORNEY BORELLI: Objection, form.

23 THE WITNESS: Okay. I misheard you. I'm
24 sorry. I didn't hear the gender dysphoria part. I

1 apologize. So in patients with gender dysphoria
2 sometimes it can be anxiety that keeps them from going
3 to school. Sometimes it can be anxiety that keeps them
4 from using public restrooms. Sometimes it is depression
5 so that they can't get out of bed to function.
6 Sometimes it's just feeling really uncomfortable and ---
7 with how they are being treated and what they're allowed
8 to do in a way that makes it more difficult for them
9 than a person without gender dysphoria.

10 BY ATTORNEY BROOKS:

11 Q. In your practice is a full diagnosis of gender
12 dysphoria under the DSM-V criteria a precondition for
13 recommending or supporting social transitioning?

14 ATTORNEY BORELLI: Objection, form.

15 THE WITNESS: So in my practice the
16 majority of my patients have socially transitioned
17 before they come to see me in order to improve their
18 gender dysphoria. In general, that is something that
19 their family and their mental health provider decides.
20 Each individual patient is different and we talk through
21 whether that is appropriate for each patient.

22 BY ATTORNEY BROOKS:

23 Q. In your practice is a full DSM-V diagnosis of
24 gender dysphoria a precondition for recommending social

1 transition?

2 ATTORNEY BORELLI: Objection, form.

3 THE WITNESS: No.

4 BY ATTORNEY BROOKS:

5 Q. And in your practice is a full DSM-V gender
6 dysphoria diagnosis a precondition for prescribing
7 puberty blockers?

8 ATTORNEY BORELLI: Objection, form.

9 THE WITNESS: I use puberty blockers for
10 more than one indication.

11 BY ATTORNEY BROOKS:

12 Q. Let me ask a better question. In your practice
13 is a full DSM-V gender dysphoria diagnosis a
14 precondition for prescribing puberty blockers as a
15 treatment for gender dysphoria?

16 ATTORNEY BORELLI: Objection, form.

17 THE WITNESS: So my patients are
18 evaluated by mental health providers outside the clinic
19 and inside the clinic. The objective of using puberty
20 blockers can be used to relieve dysphoria and give them
21 time to consider their gender identity.

22 BY ATTORNEY BROOKS:

23 Q. In your practice is a full diagnose of gender
24 dysphoria under the DSM-V criteria a precondition for

1 prescribing puberty blocker for believed gender
2 dysphoria?

3 ATTORNEY BORELLI: Objection to form.

4 THE WITNESS: Well, in the way that you
5 stated it, you're saying that the patient already has
6 gender dysphoria, so yes.

7 BY ATTORNEY BROOKS:

8 Q. In your practice is the full diagnosis of gender
9 dysphoria under the DSM-V criteria a precondition for
10 prescribing puberty blockers as a therapy for gender
11 dysphoria or gender incongruity?

12 ATTORNEY BORELLI: Objection, form.

13 THE WITNESS: Yes.

14 BY ATTORNEY BROOKS:

15 Q. And in your practice is a full diagnosis of
16 gender dysphoria according to the DSM-V criteria a
17 precondition for prescribing cross sex hormones?

18 ATTORNEY BORELLI: Objection, form.

19 THE WITNESS: They are used to relieve
20 dysphoria. Typically that would be what we would use
21 them to do, is to relieve that dysphoria so they would
22 have that diagnosis. On occasion in my practice the
23 incongruence does not necessarily cause dysphoria per
24 se, and yet they still have significant issues that are

1 impairing their ability to move forward in their lives
2 in a happy, healthy way. And I might use medications
3 such as gender-affirming hormones in those cases.

4 BY ATTORNEY BROOKS:

5 Q. So if I understand correctly, you're saying that
6 at least some cases in your practice you are willing to
7 prescribe cross sex hormones for individuals who do not
8 suffer from gender dysphoria according to the criteria
9 spelled out in DSM-V?

10 ATTORNEY BORELLI: Objection, form.

11 THE WITNESS: Every patient is different.
12 Most of my patients have gender dysphoria. All of them
13 have a transgender identity, and I would treat either of
14 those.

15 BY ATTORNEY BROOKS:

16 Q. I think this question can be answered yes or no.
17 Do you prescribe cross sex hormones for some patients
18 who do not suffer from gender dysphoria according to the
19 DSM-V criteria?

20 ATTORNEY BORELLI: Objection, form.

21 THE WITNESS: I don't think so. I mean,
22 gender-affirming hormones --- I use hormones for a lot
23 of different things. Whether you call them gender
24 affirming or not is --- you know, what is kind of a

1 thing here. I mean, for people with Klinefelter's, who
2 are clinically significantly depressed because they have
3 low testosterone, I prescribe testosterone to improve
4 their mood, their libido, their muscle strength. For
5 people who have dysphoria or who have a transgender
6 identity, I do prescribe those medications. I think
7 that to be precise in my answers I cannot say it as a
8 yes or no answer.

9 Q. Let me ask you to turn to paragraph ten of your
10 report. There you say I have treated approximately 500
11 transgender and intersex young people in my career.

12 Do you see that?

13 A. No, that's not how it's written.

14 Q. I apologize. I was reading to you the second
15 sentence of paragraph ten, and I believe I read that
16 ---.

17 A. Okay.

18 I'm sorry. I was starting at the beginning.

19 Q. I understand.

20 A. Yes.

21 Q. And let's break that out. Of those 500,
22 approximately how many suffered from some form of DSD?

23 ATTORNEY BORELLI: Objection, form.

24 THE WITNESS: So the --- that I know of,

1 because we don't evaluate every person necessarily for
2 an intersex condition, probably --- gosh, it's hard to
3 estimate. So I think at least 60 in my clinic and then
4 probably in the hospital at least 10, 15 a year. At
5 least one a month or so.

6 BY ATTORNEY BROOKS:

7 Q. Of the 500 transgender intersexual young people
8 that you treated in your career, how many would you
9 estimate suffered from some form of disorder of sexual
10 development?

11 ATTORNEY BORRELLI: Objection, form.

12 THE WITNESS: Off the top of my head I
13 can think of one. I have reviewed a referral for a
14 second one. Gosh. With that many patients, that's the
15 best I can do. Sorry.

16 BY ATTORNEY BROOKS:

17 Q. And I take it then that the overwhelming
18 majority, almost all the children that you have seen and
19 treated for gender dysphoria did not suffer from any
20 disorder of sexual development?

21 A. So at the time of my evaluation of them they
22 weren't showing any signs of an intersex condition. I
23 don't necessarily test for intersex conditions on every
24 person that comes in. Insurance is really kind of funny

1 about paying for that sort of thing because they don't
2 think it is appropriate to do. So I can't evaluate them
3 unless they have a symptom of an intersex condition.
4 Those can present even into your 30s and not be evident
5 until you are trying to get pregnant. So I think to be
6 accurate, that's ---.

7 Q. To your knowledge, almost all of the children
8 that you have treated for gender dysphoria did not show
9 signs of any intersex condition or disorder of sexual
10 development?

11 ATTORNEY BORELLI: Objection, form.

12 THE WITNESS: To best of my knowledge.

13 BY ATTORNEY BROOKS:

14 Q. Let me call your attention to page three of your
15 report, which is on page five. And you say there in the
16 second sentence, quote, all of my patients have suffered
17 from persistent gender dysphoria.

18 Do you see that?

19 A. Uh-huh (yes).

20 Q. Now, I just don't understand that because a few
21 minutes ago you explained to me that some of your
22 patients suffer from gender dysphoria and some of them
23 don't. So can you explain to me what you meant by that
24 statement?

1 ATTORNEY BORELLI: Objection, form.

2 THE WITNESS: Yeah. I learn more and
3 more every day about the patients who come into my
4 clinic. I did state that most of my patients have
5 gender dysphoria. I am finding individuals currently in
6 my practice who aren't necessarily to the point of
7 having that clinically significant criteria that is
8 mentioned in the --- for dysphoria that have a
9 transgender identification. The majority I would say do
10 have dysphoria.

11 BY ATTORNEY BROOKS:

12 Q. You would now say the majority rather than all?

13 ATTORNEY BORELLI: Objection, form.

14 THE WITNESS: I can't think of --- yeah,
15 I would say the majority. There would be a very rare
16 instance and that's why I mentioned it before.

17 ATTORNEY BORELLI: Counsel, just a quick
18 question about timing and a potential break because
19 we've been going for a little while.

20 ATTORNEY BROOKS: Right. I'm inclined to
21 go --- like from my experience, if you stop early for
22 lunch, then it's an awful long afternoon. So I'd be
23 inclined to go until 12:30 or so and then break for
24 lunch.

1 ATTORNEY BORELLI: Does that work for
2 you? Would you like a break now before we later break
3 for lunch or what is best for you, Dr. Adkins?

4 THE WITNESS: Well, since I'm not a
5 breakfast eater, I would prefer to go a little bit
6 earlier if we can.

7 ATTORNEY BROOKS: We can do it. I just
8 warn you it gets to be a long afternoon.

9 THE WITNESS: I understand.

10 ATTORNEY BROOKS: Let me finish up the
11 line of questioning. Well, should we target noon to
12 stop for lunch?

13 THE WITNESS: That's fine. Thank you.

14 BY ATTORNEY BROOKS:

15 Q. Let me take you back to the Endocrine Society
16 statement on --- back to the biological variable, which
17 is Exhibit 7. If you would find that, please. And I'll
18 ask you to turn to page 225, second column towards the
19 bottom with the heading that reads biological basis of
20 diversity and sexual/gender development and orientation.

21 Do you see that?

22 A. I do.

23 Q. And it reads at the beginning given the
24 complexities of the biology of sexual determination and

1 differentiation, comma, it is not surprising that there
2 are dozens of examples of variations or errors in these
3 pathways associated with genetic mutations that are now
4 well known to endocrinologists and geneticists. In
5 medicine these situations are generally termed disorders
6 of sexual development or differences in sexual
7 development, closed quote.

8 Do you see that?

9 A. Yes.

10 Q. Now, in your opinion, a transgender identity is
11 not a disorder.

12 Am I right?

13 A. It is a normal variation, in my opinion, of huma
14 --- of humans in general.

15 Q. It's not a mental disorder?

16 ATTORNEY BORELLI: Objection, form.

17 THE WITNESS: So you know, they have in
18 the past included it in the DSM, which is categorized as
19 those sorts of things. As far as like psychological,
20 there's such over lap between psychological and the
21 physical --- I guess the best word I can use, but that
22 it's hard to --- it's hard to say. You know, I think
23 people are moving more towards that it is more of a
24 medical problem that is occurring within the person that

1 is giving them psychological symptoms that we see, which
2 is really common in medicine. We see lots of different
3 medical conditions caused psychological symptoms. I
4 already mentioned one with hypothyroidism.

5 Q. In the overwhelming number of cases, transgender
6 identification is not associated with any physical
7 disorder that you as a doctor have become aware of?

8 ATTORNEY BORELLI: Objection, form.

9 THE WITNESS: I'm sorry. I got
10 distracted. Can you repeat it?

11 BY ATTORNEY BROOKS:

12 Q. Yes. In the overwhelming majority of patients
13 that you have seen, the transgender identity is not
14 associated with any physical disorder that you are aware
15 of.

16 Correct?

17 ATTORNEY BORELLI: Objection, form.

18 THE WITNESS: I mean, I'm going to need a
19 minute to think because I have seen so many patients
20 that I don't --- I guess it sort of depends on how you
21 define that, right. I am --- distress is physical and
22 psychological. The difference is physical in that
23 they're biologically assigned sex and those
24 characteristics associated are different from their

1 gender identity. So it's a bit of a mixture.

2 BY ATTORNEY BROOKS:

3 Q. Many individuals who suffer from disorder of
4 sexual development do not experience gender identity
5 that is discordant with their chromosomal sex.

6 Correct?

7 ATTORNEY BORELLI: Objection, form.

8 THE WITNESS: Some do, yes. That is true
9 for some.

10 BY ATTORNEY BROOKS:

11 Q. Many individuals who experience a transgender
12 identity --- I'm sorry. Many individuals who suffer
13 from a disorder of sexual development do not experience
14 a gender identity that is discordant with their
15 chromosomal sex.

16 Correct?

17 ATTORNEY BORELLI: Objection to form.

18 THE WITNESS: So there's, you know, like
19 100 different variations. Some are more likely to have
20 questions about their gender identity than others. It
21 varies by diagnosis.

22 BY ATTORNEY BROOKS:

23 Q. Okay.

24 But my question is a high level one. It is

1 true, is it not, that many individuals who suffer from a
2 disorder of sexual development do not experience gender
3 identity that is discordant with their chromosomal sex?

4 ATTORNEY BORELLI: Objection, form.

5 THE WITNESS: In the medical literature
6 the reports vary. Some of the conditions are 90 of them
7 their identity matches with their chromosomal sex and in
8 some cases it's like 30 to 40 percent.

9 BY ATTORNEY BROOKS:

10 Q. And as you have testified, many individuals who
11 experience transgender identity do not suffer from any
12 identified disorders of sexual development?

13 ATTORNEY BORELLI: Objection, form.

14 THE WITNESS: I answered that question
15 already, yeah.

16 BY ATTORNEY BROOKS:

17 Q. The answer is yes?

18 A. Yes, I answered the question already.

19 Q. For clarity I would like you to answer it again.

20 ATTORNEY BORELLI: Objection, form.

21 THE WITNESS: Can you repeat it then?

22 BY ATTORNEY BROOKS:

23 Q. Yes. Many individuals who experience a
24 transgender identity do not suffer from any known

1 disorder of sexual development?

2 ATTORNEY BORELLI: Objection, form.

3 THE WITNESS: In my experience that is
4 true.

5 BY ATTORNEY BROOKS:

6 Q. You have no knowledge as to the number of
7 children who suffer from a disorder of sexual
8 development who presently attend schools or colleges in
9 West Virginia, do you?

10 ATTORNEY BORELLI: Objection, form.

11 THE WITNESS: I can only rely on the
12 prevalence that's recorded in the medical literature and
13 then assume that West Virginia has the population base
14 that is similar to those medical reports.

15 BY ATTORNEY BROOKS:

16 Q. You, yourself, don't have any actual knowledge
17 either way on that.

18 Correct?

19 ATTORNEY BORELLI: Objection, form.

20 THE WITNESS: I have not been given a
21 list of the number of individuals, no.

22 BY ATTORNEY BROOKS:

23 Q. And you are not opining that B.P.J. suffers from
24 any disorder of sexual development, are you?

1 ATTORNEY BORELLI: Objection, form.

2 THE WITNESS: I don't know B.P.J.. I
3 have not evaluated B.P.J.. I can't say that about
4 B.P.J..

5 BY ATTORNEY BROOKS:

6 Q. And in fact, you don't know whether any child
7 who is chromosomally XY but suffers from a disorder of
8 sexual development has ever sought to compete in female
9 athletics in West Virginia, do you?

10 ATTORNEY BORELLI: Objection to form.

11 THE WITNESS: There are so many people
12 who have competed or tried to compete over the years. I
13 have not seen a documentation specifically of West
14 Virginia. It's common in athletics.

15 BY ATTORNEY BROOKS:

16 Q. You are not aware of a single case that has ever
17 occurred in West Virginia of a chromosomally XY child
18 seeking to compete in female athletics based on a ---
19 let me ask that question again. You're not aware of any
20 specific instance in which an X --- chromosomally XY
21 child who suffers from a disorder of sexual development
22 has sought to compete in female athletics in West
23 Virginia up to the present?

24 ATTORNEY BORELLI: Objection to form.

1 THE WITNESS: So some people die with
2 chromosomes XY and look completely female and never
3 knew. So I can't say that anyone could definitely say
4 that, including myself.

5 BY ATTORNEY BROOKS:

6 Q. Well, my question was you are not aware of any
7 case of an XY individual who suffered from a disorder of
8 sexual development seeking to compete in female
9 athletics in West Virginia.

10 Right?

11 ATTORNEY BORELLI: Objection to form.

12 THE WITNESS: Correct.

13 BY ATTORNEY BROOKS:

14 Q. And so let me ask you --- a substantial portion
15 of your expert report goes into all sorts of detail
16 about disorders of sexual development.

17 Correct?

18 A. Correct.

19 Q. In your understanding, what is the point? What
20 does that have to do with any opinion you are offering
21 about issues in this case?

22 ATTORNEY BORELLI: Objection, form.

23 THE WITNESS: So the folks who have
24 differences of sex development have really been our tool

1 within medicine to understand gender identity and how it
2 developed over time, especially when there may be some
3 difference in the effects of the chromosomes, the
4 hormonal expression and the biological external
5 reproductive genitalia. And it elicits --- kind of
6 shows us that there can be some variations that identity
7 that you might have --- I'm sorry, sex that you might
8 assign at birth based on one of these categorical things
9 or a mixture of them may not be exactly what a person
10 identifies at birth.

11 For example, there are individuals who
12 are born who never had any hormones, they don't have
13 external genitalia at all when they're born, and so how
14 do you decide what sex to assign that person and thus
15 what gender to assign that person, and so it --- it
16 helps us understand that there are lots of different
17 things that go into determining a gender identity and
18 you may not know it right at birth, certainly not at
19 conception, but you may begin to understand it as the
20 person grows older.

21 And so it's important to know that
22 because when there are differences between those two
23 things it can cause significant distress and harm to the
24 individual as they get older if those two are not

1 matching.

2 BY ATTORNEY BROOKS:

3 Q. Let me take you to paragraph 28 of your expert
4 report. At the end of that paragraph you state I know
5 from experience with my patients that it can be
6 extremely harmful for transgender youth to be excluded
7 from the team consistent with their transgender
8 identity. Do you see that?

9 A. It actually says with their gender identity.

10 Q. If I misspoke, I apologize. For the record, let
11 me just do it again. Quote, I know from experience with
12 my patients that it can be extremely harmful for
13 transgender youth to be excluded from the team
14 consistent with their gender identity, closed quote.

15 Do you see that language?

16 A. I do.

17 Q. Let me just ask were you a varsity high school
18 or college athlete yourself?

19 ATTORNEY BORELLI: Objection, form.

20 THE WITNESS: I was.

21 BY ATTORNEY BROOKS:

22 Q. Now, let me ask what you understand to be the
23 significance of that statement, that is are you offering
24 an opinion in this litigation that the West Virginia law

1 is unreasonable to the extent that it prevents even a
2 single transgender youth from playing in a division
3 consistent with their gender identity?

4 ATTORNEY BORELLI: Objection, form.

5 THE WITNESS: I'm sorry. That wasn't
6 clear. Can you ---?

7 BY ATTORNEY BROOKS:

8 Q. Are you offering an opinion that the West
9 Virginia law is unreasonable to the extent it prevents
10 even a single transgender youth from playing in the
11 division consistent with their gender identity?

12 ATTORNEY BORELLI: Objection, form.

13 THE WITNESS: Yes.

14 BY ATTORNEY BROOKS:

15 Q. Are you offering an opinion that West Virginia
16 does not have a strong interest in ensuring fair and
17 safe competition for females in their schools and
18 universities?

19 ATTORNEY BORELLI: Objection, form.

20 THE WITNESS: I think that would require
21 me to have to, you know, talk with them about that and
22 understand a little bit better. I would hope it would
23 be every one that they were trying to keep safe.

24 BY ATTORNEY BROOKS:

1 Q. Are you offering an opinion that West Virginia
2 law is not a reasonable measure to ensure fair and safe
3 competition for females in schools and colleges?

4 ATTORNEY BORELLI: Objection, form.

5 THE WITNESS: Again, the language is ---
6 it's not really clear with the female who uses the word
7 female. It's like using the word sex. It's just not
8 clear.

9 BY ATTORNEY BROOKS:

10 Q. Dr. Adkins, I used the word female because
11 earlier in one of these papers where it said woman you
12 said it would work if they said female as a sex
13 indicator to be distinguished from gender identity.

14 Do you recall that testimony?

15 A. I do.

16 Q. Let me ask the question again using the term
17 female in the way that you meant in that earlier
18 testimony. Are you offering an opinion that the West
19 Virginia law is not a reasonable measure to ensure fair
20 and safe competition for females in schools and colleges
21 in West Virginia?

22 ATTORNEY BORELLI: Objection, form.

23 THE WITNESS: Yes.

24 BY ATTORNEY BROOKS:

1 Q. Can you tell me the examples that you had in
2 mind when you said I know from experience that it can be
3 extremely harmful for transgender youth to be excluded
4 from the team consistent with their gender identity?

5 A. I can.

6 Q. Please do.

7 A. I have patients who have participated in sports
8 with the teams that they identify as. Their fellow
9 students only know them as the gender that they identify
10 with and that they express. If they were asked to
11 participate on a team that matched their sex assigned at
12 birth, then these individuals would, for one, would be
13 on the boys' team and then everyone in school would know
14 that they were transgender. They don't have to know
15 that. It is not any of their business.

16 Once they are identified as transgender, they
17 are at high risk for being bullied, harassed, sexually
18 assaulted, and leaving school, which leads to poor jobs,
19 poor insurance, homelessness. There are any number of
20 reasons that I would want my patient to be able to
21 participate on the team that identifies with their
22 gender identity to keep them healthy.

23 Q. Dr. Adkins, your answer said if they were
24 required to play on the team corresponding to their I'll

1 say chromosomal sex, their natal sex, which suggests you
2 have not actually seen it happen. Is there a single
3 case you can point me to in which you have observed a
4 patient harmed by being excluded from the team
5 consistent with their gender identity?

6 A. Yes.

7 Q. Can you tell me that area?

8 ATTORNEY BORELLI: Objection, form.

9 THE WITNESS: Well, one of my patients
10 who had been on middle school sports teams that matched
11 their gender identity was then asked to change. And
12 they didn't feel comfortable going with the other
13 individuals because their identity would be discovered,
14 their --- individuals would know that they were
15 transgender. No one at the time knew and still to this
16 day don't know because they chose not to participate
17 rather than be on the team that didn't match their
18 gender identity.

19 BY ATTORNEY BROOKS:

20 Q. And when and what state did these events occur?

21 A. North Carolina.

22 ATTORNEY BORELLI: Objection to form.

23 BY ATTORNEY BROOKS:

24 Q. That's where, when? That's your Counsel's

1 objection.

2 A. North Carolina in --- for this particular
3 patient, three years ago. I have patients that come in
4 every day who this applies.

5 Q. Dr. Adkins, given that you're testifying under
6 oath and trying to be accurate, is it true that you have
7 patients come in every day that this applies to?

8 ATTORNEY BORELLI: Objection, form.

9 BY ATTORNEY BROOKS:

10 Q. Aren't we getting a little carried away here?

11 ATTORNEY BORELLI: Objection, form.

12 THE WITNESS: I do like to be precise.

13 BY ATTORNEY BROOKS:

14 Q. Thank you.

15 A. In clinic, most days when I'm in clinic I see a
16 patient who doesn't participate in athletics because of
17 the requirement that they go to participate in an area
18 that is for their assigned sex at birth. Most days I'm
19 in a gender clinic.

20 Q. And what you state in your document, in your
21 report here, is that you know from experience that being
22 excluded from the team consistent with their gender
23 identity can be, quote, extremely harmful to transgender
24 youth. You have described to me students who choose not

1 to participate in athletics. Beyond that, can you give
2 me examples of extreme harm that has resulted from such
3 policies?

4 ATTORNEY BORELLI: Objection, form.

5 THE WITNESS: You know, some of that
6 would require a bit of speculation because I wouldn't
7 know what would happen to those individuals if they
8 remain in the sport.

9 BY ATTORNEY BROOKS:

10 Q. I'm not asking you to speculate.

11 A. So can you re-ask the question so I can kind of
12 figure out how to answer it better.

13 Q. I'll re-ask it and maybe that you're not able to
14 answer it, but can you identify for me specific extreme
15 harm that individual patients have suffered as a result
16 of not being able to participate in the team consistent
17 with their gender identity?

18 ATTORNEY BORELLI: Objection, form.

19 THE WITNESS: So I have had patients who
20 have no longer participated in sports, gained weight,
21 become obese and developed type two diabetes. I have
22 seen that around --- I can think of at least two
23 examples. And then, you know, that's a chronic life
24 long disease that can lead to amputation and all kinds

1 of other harms. And let's see, what other things.

2 I have seen patients with --- who were no
3 longer happy at their school and because the time that
4 they were identified as transgender were asked to leave
5 their sport, their friend groups changed. And you know,
6 it's tough in school. There are kids who have --- and
7 that kind of can push them down the slope of suicidal
8 ideation and depression and those sorts of things. I
9 mean, I have to think longer for other examples. Those
10 are two.

11 BY ATTORNEY BROOKS:

12 Q. Rather than starting something else, should we
13 break now for lunch?

14 ATTORNEY BORELLI: That works.

15 VIDEOGRAPHER: Going off the record. The
16 current time reads 11:54 a.m. Eastern Standard Time.

17 OFF VIDEO

18 ---

19 (WHEREUPON, A PAUSE IN THE RECORD WAS HELD.)

20 ---

21 ON VIDEO

22 VIDEOGRAPHER: We're back on the record.
23 Current time reads 12:57 p.m. Eastern Standard Time.

24 BY ATTORNEY BROOKS:

1 Q. Okay.

2 Dr. Adkins, welcome back from lunch. On we go.
3 We're going to have a long afternoon. Let me mark as
4 Exhibit 10 what we have previously identified as tab 16,
5 which is an article dated January 10, 2022 from the
6 Washington Post entitled A Transgender College Swimmer
7 is Shattering Records, Sparking a Debate Over Fairness.

8 ---

9 (Whereupon, Adkins Exhibit 10, 1/10/22
10 Washington Post Article, was marked for
11 identification.)

12 ---

13 BY ATTORNEY BROOKS:

14 Q. Dr. Adkins, let me just ask generally, you're
15 aware of recent events in the news involving Leah
16 Thomas's competition in NCAA swimming.

17 Correct?

18 ATTORNEY BORELLI: Objection, form.

19 THE WITNESS: I am aware of various
20 pieces of that.

21 BY ATTORNEY BROOKS:

22 Q. And I'm not going to try to turn you into an
23 expert on Lia Thomas, but you're just aware of that
24 narrative. Are you generally aware that at least until

1 recently the NCAA policy for a decade at the collegiate
2 level was that XX --- XY individuals, males, to use that
3 terminology, could compete based on gender identity in
4 women's divisions only after they had suppressed
5 testosterone for at least a year?

6 ATTORNEY BORELLI: Objection, form.

7 THE WITNESS: I don't know the details of
8 NCAA. I just don't.

9 BY ATTORNEY BROOKS:

10 Q. Are you aware generally that some athletic
11 leagues have a requirement that biological males may
12 compete in women's athletics based on gender identity
13 only after suppressing testosterone for some period of
14 time?

15 ATTORNEY BORELLI: Objection, form.

16 THE WITNESS: I have heard that there are
17 individuals who are allowed to participate based on
18 their gender identity and that there's some comment
19 about hormone suppression.

20 BY ATTORNEY BROOKS:

21 Q. And do you have college-age transgender patients
22 yourself?

23 A. I do.

24 Q. Does your statement that we looked at in

1 paragraph 28 of your report that it can be extremely
2 harmful for transgender youth to be excluded from the
3 team consistent with their gender identity hold true in
4 your opinion at to collegiate level? And I was quoting
5 from paragraph 29.

6 ATTORNEY BORELLI: To clarify, you just
7 said 29 --- 28, paragraph 28?

8 ATTORNEY BROOKS: It is paragraph 28. I
9 apologize.

10 ATTORNEY BORELLI: Thank you. I can't
11 remember if I lodged an objection. Objection to form.

12 THE WITNESS: And the question was?

13 BY ATTORNEY BROOKS:

14 Q. The question was does your assertion in
15 paragraph 28 of your report that you know from
16 experience the patients --- that it can be extremely
17 harmful for transgender youth to be excluded from the
18 team consistent with their gender identity apply to
19 college-age individuals as well as high school or
20 younger individuals?

21 ATTORNEY BORELLI: Objection, form.

22 THE WITNESS: In my experience, that ---
23 yes.

24 BY ATTORNEY BROOKS:

1 Q. Do you have any opinion as to whether a policy
2 that requires biologically male athletes to suppress
3 testosterone for a certain period of time or to a
4 certain level of testosterone prior to competing in
5 women's or girls' athletics is reasonable or
6 unreasonable?

7 ATTORNEY BORELLI: Objection, form.

8 THE WITNESS: So you're asking me if
9 that's my opinion? I'm sorry. Could you just repeat
10 the question?

11 BY ATTORNEY BROOKS:

12 Q. Do you have an opinion --- do you have an
13 opinion as to whether a policy that requires
14 biologically male athletes to suppress testosterone
15 either for a certain period of time or down to a certain
16 level before they can be eligible to compete in women's
17 athletics based on gender identity is reasonable or
18 unreasonable?

19 ATTORNEY BORELLI: Objection, form.

20 THE WITNESS: It gets tricky. I am ---
21 you know, when you start throwing in sort of people with
22 PCOS and people with intersex conditions and --- it gets
23 tricky. So it's harder for me to answer.

24 I think the question was do I have an

1 opinion if it's reasonable or not reasonable? Is that
2 the question?

3 BY ATTORNEY BROOKS:

4 Q. That is.

5 A. Okay.

6 In some cases it might be reasonable and some
7 cases it might not be reasonable.

8 Q. If we put on one side and exclude from
9 consideration individuals who suffer from any form of
10 disorder of sexual development, do you believe that a
11 policy that requires biologically male athletes to
12 suppress testosterone either for a certain period of
13 time or down to a certain level before they can be
14 eligible to play in women's athletics based on gender
15 identity is reasonable or unreasonable?

16 ATTORNEY BORELLI: Objection, form.

17 THE WITNESS: So you know, for those who
18 are assigned male at birth, it depends on where they
19 are, you know, and what sport they're doing and what's
20 involved. There are a number of caveats that could be
21 thrown in there along those lines.

22 BY ATTORNEY BROOKS:

23 Q. Is it you don't know what you think about that?

24 ATTORNEY BORELLI: Objection to form.

1 THE WITNESS: I think you misunderstood
2 the answer that I gave. It would really depend on a
3 specific case.

4 BY ATTORNEY BROOKS:

5 Q. Well, let's look at a specific case. I have put
6 in front of you Exhibit 10, this Washington Post article
7 from January 10, 2022 about Lia Thomas, who, according
8 to the headline, is shattering records. Let me ask you
9 to turn in that article to page three. And there it ---
10 if we look at the third paragraph, the one that begins
11 her fastest 200 yard freestyle, and the second sentence
12 --- or the third sentence says that's the fastest time
13 by any female college swimmer this year, .64 seconds
14 faster than Olympian Torri Huske. And it continues,
15 quote, Thomas has also posted the nation's best 500 yard
16 freestyle, timed this season at four minutes, 34.06
17 seconds, nearly three seconds faster than Olympian
18 Brooke Forde.

19 Do you see that?

20 A. Uh-huh (yes).

21 Q. And these records were set after Lia Thomas had
22 qualified under the NCAA requirement of testosterone
23 suppression for one year. So my question on the
24 specific sport for you is, is it your view that a policy

1 that permits Thomas to compete in the women's division
2 against competitors who are biologically female is fair?

3 ATTORNEY BORELLI: Objection, form.

4 THE WITNESS: So you will note in the
5 paragraph above it also says that her time slowed down
6 once she had this happened and she was suppressing her
7 testosterone. You know, I --- I don't want to use that
8 word. There are so many things that go into athletic
9 performance and your time that's not totally related to
10 your sex assignment at birth or your current hormonal
11 status, practice, you know, training, whether you had an
12 opportunity to get started at a young age, a lot of
13 variables that aren't related to their current hormones.

14 BY ATTORNEY BROOKS:

15 Q. Do you have an opinion as to whether a policy
16 that permits Lia Thomas to compete against those born
17 female in swimming is fair?

18 ATTORNEY BORELLI: Objection to form.
19 Counsel, I think we're starting to get outside the
20 scope. The witness can answer this question if she can,
21 but we're treading on that territory.

22 THE WITNESS: So in that there are very
23 few transgender individuals who are involved and there
24 are lots and lots and lots of opportunities for those

1 assigned female at birth to compete, I think it is fair.

2 BY ATTORNEY BROOKS:

3 Q. And let me call your attention two paragraphs
4 down where it begins everybody wants, and quoting
5 Michael Joyner, who identifies as a physiologist at the
6 Mayo Clinic. Are you familiar with the reputation of
7 the Mayo Clinic?

8 A. Yes.

9 Q. It is a high reputation.
10 Am I correct?

11 ATTORNEY BORELLI: Objection, form.

12 THE WITNESS: In general, people think it
13 has a good reputation.

14 BY ATTORNEY BROOKS:

15 Q. If you read this paragraph, Dr. Joyner says,
16 quote, everybody wants to maximize each individual's
17 opportunity to participate and be as inclusive as
18 possible, one of the researchers, Michael Joyner, a
19 physiologist at the Mayo Clinic, said in an interview.
20 And his quote continues, but how do you balance that
21 inclusion at the individual level with the fairness to
22 the entire field? That's really the split the baby
23 question, closed quote.

24 Do you see that language?

1 A. I do.

2 Q. Do you agree that the question of fairness that
3 Dr. Joyner addresses there is, in fact, a tough question
4 on which reasonable people could disagree?

5 ATTORNEY BORELLI: Objection, form. And
6 counsel, I need to renew my objection as to scope.

7 ATTORNEY BROOKS: You can have a standing
8 objection as to scope, but I can pursue this line of
9 questioning.

10 THE WITNESS: I would like to take a
11 moment to read the whole article, please.

12 ATTORNEY BORELLI: Counsel, can you point
13 me to the portion of the report where she offers
14 opinions about things?

15 ATTORNEY BROOKS: She has offered the
16 opinion in the report that denying participation is
17 extremely harmful. She has testified on the record that
18 in her view, a policy that permits even one transgender
19 individual from playing according to their gender
20 identity, that she has an opinion, but she is offering
21 an opinion that that is an unreasonable policy. I
22 intend to examine that thoroughly. Scope is not tightly
23 limited on expert depositions, I assure you.

24 ATTORNEY BORELLI: I'm going to stand on

1 my objection. We'll see where the line of questioning
2 goes and we'll confer again if we need to.

3 ATTORNEY TRYON: This is Dave Tryon. I
4 would ask that if there are further speaking objections
5 or discussions about scope, it be done outside the
6 presence of the witness.

7 BY ATTORNEY BROOKS:

8 Q. Let me ask you this without taking the time ---
9 without reading the entire document, do you agree or
10 disagree with Doctor Joyner that the question of whether
11 a biologically male individual such as Lia Thomas should
12 be permitted to compete in the women's division against
13 biological females is a tough question that reasonable
14 people can differ?

15 ATTORNEY BORELLI: Objection to form.

16 ATTORNEY BROOKS: That's enough. That's
17 all you may say.

18 ATTORNEY BORELLI: Excuse me. Counsel,
19 the witness has ---.

20 ATTORNEY BROOKS: You may say objection
21 to form.

22 ATTORNEY BORELLI: The witness has ---
23 the witness asked to read the entire document.

24 ATTORNEY BROOKS: I am asking a question

1 free and apart from the document. And I'm entitled to
2 do that.

3 ATTORNEY BORELLI: I'm not persuaded that
4 this is free and apart from the document.

5 ATTORNEY BROOKS: I will make it 100
6 percent apart from the document.

7 ATTORNEY BORELLI: Can you please restate
8 the question to do that? Thank you.

9 BY ATTORNEY BROOKS:

10 Q. Dr. Adkins, do you agree that the question of
11 whether a biological male such as Lia Thomas should be
12 permitted to compete against biological females in the
13 collegiate level is a tough question on which reasonable
14 people can differ?

15 ATTORNEY BORELLI: Objection, form.
16 Counsel, you just put an article ---.

17 ATTORNEY BROOKS: That's enough of the
18 speaking objection. I can take the article back away
19 from the witness. My question makes no reference to the
20 article.

21 ATTORNEY BORELLI: Your question makes
22 reference to ---.

23 ATTORNEY BROOKS: Counsel, that's enough
24 speaking objections. You are violating the Federal

1 Rules.

2 ATTORNEY BORELLI: I strongly disagree
3 with that characterization. I don't think that's
4 correct. You're asking questions about a subject of the
5 article. Physically removing the article from the
6 witness doesn't remove that question from the subject of
7 the article.

8 ATTORNEY BROOKS: I don't have to show
9 the witness every article about a topic. The witness is
10 aware of Lia Thomas. I'm asking a question about Lia
11 Thomas and competitive swimming. The witness can
12 answer.

13 ATTORNEY BORELLI: I stand on my
14 objection.

15 ATTORNEY BROOKS: You can do so.

16 THE WITNESS: Sorry. Thank you.

17 You know, everybody has their opinion
18 based on their experience and their knowledge and
19 they're allowed to state that and confer with others
20 about it. Whether or not it is reasonable is a whole
21 other question, and that involves perspective and
22 background. So with that caveat, I could see people
23 having different opinions on this particular matter.

24 BY ATTORNEY BROOKS:

1 Q. Thank you.

2 ATTORNEY BROOKS: Can we mark as Exhibit
3 11 a document previously identified as tab 17, article
4 from the publication named Out Sports that is dated
5 January 9, 2022.

6 ---

7 (Whereupon, Adkins Exhibit 11, 1/9/22
8 Out Sports Article, was marked for
9 identification.)

10 ---

11 BY ATTORNEY BROOKS:

12 Q. Dr. Adkins, have you heard the name Iszac Henig?

13 A. No.

14 Q. Did you hear any news items that a transgender
15 male competing in the female division that is genetic
16 female, male identity, transgender male competing in the
17 female division, beat Lia Thomas, a transgender female
18 competing in the female division, in certain races?
19 Have you heard that?

20 A. No.

21 ATTORNEY BORELLI: Objection, form.

22 BY ATTORNEY BROOKS:

23 Q. All right.

24 You stated in paragraph 28 that it can be

1 harmful for patients, deeply harmful, for transgender
2 youth to be excluded from the team consistent with their
3 gender identity. In your view is a policy that requires
4 transgender youth who are biologically male to suppress
5 testosterone before they can be eligible to compete on a
6 team consistent with their gender identity extremely
7 harmful to youth?

8 ATTORNEY BORELLI: Objection, form.

9 THE WITNESS: I was trying to catch up
10 with you with finding the page.

11 BY ATTORNEY BROOKS:

12 Q. That was a complicated question. I will ask it
13 again.

14 A. Thank you.

15 Q. In your view is a policy that requires a
16 biological male who experiences a female gender identity
17 to suppress testosterone prior to becoming eligible to
18 compete in the women's division extremely harmful?

19 ATTORNEY BORELLI: Objection, form.

20 THE WITNESS: Suppression of the
21 testosterone for my practice isn't the --- you know, the
22 harm. It is the exclusion that does most of the harm.
23 I think I answered that.

24 BY ATTORNEY BROOKS:

1 Q. Let me try to --- in light of what you just
2 said, let me ask a better question. In your view, is a
3 policy that excludes a biological male who identifies as
4 a woman from competition in the women's division unless
5 and until that biological male has suppressed
6 testosterone extremely harmful?

7 ATTORNEY BORELLI: Objection to form.

8 THE WITNESS: So the sex assigned at
9 birth for this person would be male and would need time
10 to suppress testosterone, which takes time and leads to
11 limitations in participation of sports, in competition.
12 I think that disadvantages most athletes if they have to
13 take time off for any kind of medical treatment for
14 their preparation. In that fashion it would be harmful
15 to the athlete.

16 BY ATTORNEY BROOKS:

17 Q. And I believe you testified you don't have any
18 simple single opinion as to whether it would
19 nevertheless be reasonable despite being harmful to that
20 athlete?

21 ATTORNEY BORELLI: Objection to form.

22 THE WITNESS: I don't think that's what I
23 said.

24 BY ATTORNEY BROOKS:

1 Q. All right.

2 Then I'll ask a different to avoid
3 unclarity. Do you have an opinion as to whether,
4 despite the harm that you have described, a policy that
5 requires suppression of testosterone in order for such
6 an individual to be eligible to compete in a women's
7 division is reasonable?

8 ATTORNEY BORELLI: Objection to form.

9 THE WITNESS: That's complicated. I
10 apologize for not answering yes or no. I just ---
11 sometimes you get lost in your question. So I don't
12 think it's reasonable to ask them not to participate.
13 They need time to practice and participate like all
14 their peers that are practicing and competing at the
15 time.

16 BY ATTORNEY BROOKS:

17 Q. So your testimony as you sit here today is that
18 even as a biologically male athletes, natal male
19 athletes who have not suppressed testosterone at all, it
20 is not reasonable to exclude them from participation in
21 the women's division?

22 ATTORNEY BORELLI: Objection, form.

23 THE WITNESS: To those who are assigned
24 female at birth, you're again going to cause them harm

1 by not allowing them to participate and not be affirmed
2 in their gender. That --- part of it is a big part of
3 what it means to improve their overall health and what
4 we do to care for these individuals. You're also
5 marking them by saying that they are, you know,
6 transgender and that is going to cause all kinds of
7 kerfuffle and people are not nice to them. It can cause
8 extreme harm to them in that way.

9 BY ATTORNEY BROOKS:

10 Q. In the beginning of your answer you referred to
11 individuals identified as female at birth.

12 A. Assigned female at birth.

13 Q. And I think that your answer was speaking to
14 individuals who are assigned male at birth.

15 A. Applies to both.

16 ATTORNEY BORELLI: Objection, form.

17 BY ATTORNEY BROOKS:

18 Q. Then let me re-ask my question because I asked
19 about individuals assigned male at birth. As to those
20 individuals, is it your opinion that a policy that
21 requires them to suppress testosterone prior to becoming
22 eligible for participation in the women's division or
23 high school level girls division is unreasonable?

24 ATTORNEY BORELLI: Objection, form.

1 THE WITNESS: For an assigned male at
2 birth, suppressing testosterone, so we're clear because
3 you used the word they in that particular question, I
4 think it is unreasonable for them to be taken out of
5 their sport. I think it causes harm. We see evidence
6 that it causes harm with regard to depression, anxiety,
7 suicidality. It also causes metabolic harm, changes in
8 the performance.

9 ATTORNEY BROOKS: Let me mark this
10 Exhibit 11, an article by Duke Professor Doriane
11 Lambelet Coleman, Michael Joyner and Donna Lopiano, the
12 Duke Journal of Gender Law and Policy.

13 ---
14 (Whereupon, Adkins Exhibit 11, Duke
15 Journal of Gender Law and Policy
16 Article, was marked for identification.)

17 ---
18 VIDEOGRAPHER: Counsel, I didn't fully
19 catch which document that was? Did you say it was tab
20 19?

21 ATTORNEY BROOKS: It is tab 19, that's
22 correct.

23 VIDEOGRAPHER: Thank you.

24 BY ATTORNEY BROOKS:

1 Q. Dr. Adkins, let me ask whether you have before
2 now been aware of this article by Duke Professor Coleman
3 and others?

4 A. I have heard of an article, yes.

5 Q. Do you know Professor Coleman?

6 A. I met Professor Coleman once.

7 Q. And have you ever seen this article before
8 today?

9 A. I haven't looked at it.

10 Q. Probably my questioning about it will be very
11 short. Let me ask you to turn to page 88. At the very
12 bottom of page 88 is a sentence that runs over into 89
13 that reads as follows. If elite sport were coed or
14 competition were open, even the best female would be
15 rendered invisible by the sea of men and boys who would
16 surpass her, closed quote. Do you see that language?

17 A. I do.

18 Q. Do you have the expertise to evaluate whether
19 that is true or false?

20 ATTORNEY BORELLI: Object to form.

21 THE WITNESS: The --- well, again, you
22 are picking one sentence out of a whole article. And I
23 know that Dr. Coleman has actually called into question
24 some of the information from this report in particular.

1 And without knowing which things I can't really rely on
2 this document to say whether it's true. And that's not
3 --- that's her expertise.

4 BY ATTORNEY BROOKS:

5 Q. Well, that's my question. Do you believe that
6 it is within your expertise to evaluate that sort of
7 question about sporting performance?

8 ATTORNEY BORELLI: Object to the form.

9 THE WITNESSS: Again, you are picking one
10 sentence. I have some professional experience with
11 assisting people in improving their physiology with
12 regard to, you know, muscle mass, fat mass. Sport would
13 be outside what I would have to say --- this
14 specifically.

15 BY ATTORNEY BROOKS:

16 Q. I'm not sure that was a compete sentence, let me
17 ask a follow-up question. Is it the case that it is ---
18 you consider it outside your professional expertise to
19 evaluate the truth or falsity of this supposed assertion
20 that, quote, if elite sport were coed or competition
21 were open, even the best female would be rendered
22 invisible by the sea of men and boys who would surpass
23 her, closed quote?

24 ATTORNEY BORELLI: Object to form.

1 THE WITNESS: That's not been my
2 experience. That's not what we're seeing in sports. I
3 can't say anything else about whether or not I could
4 assess it. That would be my only way to assess it based
5 on my experience.

6 BY ATTORNEY BROOKS:

7 Q. What is your professional training or research
8 that qualifies you to evaluate the impact that would be
9 experienced in athletics on biological women if sport
10 were coed or competition were open?

11 ATTORNEY BORELLI: Objection to form.

12 THE WITNESS: Yeah. I don't study
13 sports.

14 BY ATTORNEY BROOKS:

15 Q. You are an endocrinologist by training.

16 Is that correct?

17 A. I am.

18 Q. Do you have an expert opinion as to what lasting
19 or legacy --- strength and athletic capability if any
20 way natal males continue to enjoy over natal females
21 after suppressing testosterone?

22 ATTORNEY BORELLI: Objection, form.

23 THE WITNESS: So there's a lack of
24 research in this area. I feel like we need more

1 information regarding this. I don't think that there's
2 a way to answer that question with the data that we have
3 at this time.

4 BY ATTORNEY BROOKS:

5 Q. Is it true in your practice that most of your
6 biologically male patients present at your clinic let's
7 say after age 13?

8 ATTORNEY BORELLI: Object to form.

9 THE WITNESS: Most of my patients who are
10 assigned which at birth did you say?

11 BY ATTORNEY BROOKS:

12 Q. Male.

13 A. After age what again?

14 Q. I chose 13.

15 ATTORNEY BORELLI: Same objection.

16 THE WITNESS: I would agree with that.

17 BY ATTORNEY BROOKS:

18 Q. And implications of that are that those
19 individuals have already experienced --- well, let me
20 ask it differently. In your experience or based on your
21 training, either one, on average what Tanner stage are
22 boys at by the time they have finished their 13th year?

23 ATTORNEY BORELLI: Objection, form.

24 THE WITNESS: So assigned male at birth?

1 BY ATTORNEY BROOKS:

2 Q. Correct.

3 A. The average at 13 is Tanner 3.

4 Q. By the end of age 13 you would say Tanner 3?

5 A. It is really 13 and a half is what the published
6 literature says.

7 Q. So presumably by the end of their 13th year,
8 when they're older than 13 they're either in a later
9 stage of Tanner stage 3 or moving into Tanner stage 4?

10 ATTORNEY BORELLI: Objection, form.

11 THE WITNESS: On average, but there is
12 such a wide variety of --- they can present with puberty
13 from 9 to 14. And they all move differently at
14 different rates and different times, so there's a lot of
15 variety in the 13 and a half year olds I see in my
16 clinic who are assigned male at birth.

17 BY ATTORNEY BROOKS:

18 Q. And my question was about averages. So on
19 average, by the end of the 13th year the patients you
20 see would be towards the end of Tanner stage 3 or
21 entering into Tanner stage 4?

22 ATTORNEY BORELLI: Objection, form.

23 THE WITNESS: On average, yeah.

24 BY ATTORNEY BROOKS:

1 Q. And by that time those biologically male who
2 have under gone effects on skeleton, on height, on
3 musculature, typical of or sometimes referred to as
4 verilization.

5 Correct?

6 ATTORNEY BORELLI: Objection, form.

7 THE WITNESS: So at 13 and a half the
8 average assigned male at birth is dead center their
9 growth spurt, so they've only gone through about half of
10 it. They still have about half of it left.

11 BY ATTORNEY BROOKS:

12 Q. Okay.

13 And do you have any knowledge as to whether
14 they have also undergone changes in heart and lung size
15 and bone strength that are typical of male puberty?

16 ATTORNEY BORELLI: Objection, form.

17 THE WITNESS: So I can't comment about
18 the heart and the lung. The lung size is typically
19 proportioned to the body size. So in that way, halfway.
20 Bone strength, however, there's more information about.
21 And you know, people don't get their peak bone mass
22 until they're 30, so they have a long way to go starting
23 from 13 and a half before they reach that.

24 BY ATTORNEY BROOKS:

1 Q. Have, on average, males experienced significant
2 bone densification by age --- by the end of their 13th
3 year?

4 ATTORNEY BORELLI: Objection, form.

5 THE WITNESS: Depends on your definition
6 of significant. Clinically significant, medically
7 significant? Is it, you know, significant with regard
8 to the biological assay. Is it you're talking about
9 which would --- Dexus scans?

10 BY ATTORNEY BROOKS:

11 Q. I will take clinically significant.

12 ATTORNEY BORELLI: Objection to form.

13 THE WITNESS: Can you repeat your
14 question with that?

15 BY ATTORNEY BROOKS:

16 Q. Yes. On average, have biological males
17 experienced clinically significant bone densification by
18 the end of their 13th year?

19 ATTORNEY BORELLI: Objection, form.

20 THE WITNESS: Over their life span they
21 do continue to increase their bone density. The peak of
22 bone density is much later, so every person is different
23 as to where they are in that density scale. At the
24 middle of puberty, I mean, I would be guessing if I said

1 anything specific.

2 BY ATTORNEY BROOKS:

3 Q. Well, as I tell witnesses I am defending I don't
4 know is always a great conversation stopper. Is it your
5 testimony that you don't actually know how much bone
6 densification has occurred by the end of the 13th year
7 in those in biological males?

8 ATTORNEY BORELLI: Objection, form.

9 THE WITNESS: I haven't looked at it ---
10 I haven't looked at it recently. There are --- that's
11 an --- interpretations that we use and it comes with our
12 reports and I would have to look at that to rely on it.

13 BY ATTORNEY BROOKS:

14 Q. Have you heard the name Joanna Harper?

15 A. No.

16 Q. Let me see tab 24.

17 ATTORNEY BROOKS: Marking 13, what was
18 previously designated tab 24, article published December
19 2020 by Emma Hilton and Tommy Lundberg, titled
20 Transgender Women in the Female Category of Sport:
21 Perspectives on Testosterone Suppression and Performance
22 Advantage.

23 ---

24 (Whereupon, Adkins Exhibit 13, 2020

1 Hilton and Lundberg Article, was marked
2 for identification.)

3 ---

4 BY ATTORNEY BROOKS:

5 Q. And Dr. Adkins, let me ask again whether you
6 know the name Emma Hilton or Tommy Lundberg.

7 A. No.

8 Q. Can I take it then you have not seen this
9 article before?

10 A. I wouldn't say that one equals the other. I'm
11 terrible with names, to be quite honest.

12 Q. Let me ask --- therefore, I retract that
13 question. Do you recall seeing this article before
14 today?

15 A. No.

16 Q. Okay.

17 Then again, we will be short. You see the
18 title. I understand you have not seen it. Let me ask
19 you to turn to page 201. About an inch down in the
20 first column, summarizing other research the authors of
21 this paper write an extensive review of fitness from
22 over 85,000 Australian children age 9 to 17 years old
23 show that, compared with 9 year old females, 9 year old
24 males were faster over short sprints, 9.8 percent, and

1 one mile, 16.6 percent. Could jump 9.5 percent further
2 from a standing start, a test of explosive power.
3 Quote, could complete 33 more push ups in 30 seconds and
4 had 13.8 percent stronger grip, closed quote. Do you
5 see that language?

6 A. Yeah.

7 Q. And my question for you is you have yourself any
8 knowledge as to whether the facts recited there are
9 scientifically accurate or inaccurate?

10 ATTORNEY BORELLI: Objection, form.

11 THE WITNESS: So whenever I'm reviewing
12 an article, and again, I have not seen the full article,
13 it's reporting on population from Australia, which I
14 usually use the population that I'm talking about when I
15 am using that information to help guide my practice. So
16 I'm not completely sure that would be a thing that would
17 come into my mind when looking at this. Is this the
18 same population in Australia you we're seeing here?
19 That's one of my first questions about it.

20 BY ATTORNEY BROOKS:

21 Q. And I understand that everybody in Australia is
22 upside down, but my question simply was do you have any
23 knowledge as to whether, as a matter of science, these
24 assertions are true or false?

1 ATTORNEY BORELLI: Objection, form.

2 THE WITNESS: They have published it in a
3 peer reviewed journal I think. I would have to look if
4 this is a peer reviewed journal because some are not.
5 If those things are true, the assumption we make in
6 medicine is that they are true.

7 BY ATTORNEY BROOKS:

8 Q. You are a very trusting person to peer reviewed
9 journals.

10 A. They get redacted all the time. So again, my
11 previous thing is you got to look at all of the pieces,
12 et cetera.

13 Q. In general --- in general, do you consider that
14 your expertise extends to the question of how much
15 athletic advantage biological males enjoy over
16 biological females prior to puberty, if any?

17 ATTORNEY BORELLI: Objection, form.

18 THE WITNESS: I know limited amount of
19 that information. We all learn a little bit, but I
20 wouldn't say that I could say, you know, I know
21 everything that exists.

22 BY ATTORNEY BROOKS:

23 Q. What is your source of information in that area?

24 ATTORNEY BORELLI: Objection, form.

1 THE WITNESS: Generally education in
2 medical school and then looking at hormonal effects in
3 muscle and bone and those things. But not in particular
4 these specific tests.

5 BY ATTORNEY BROOKS:

6 Q. Do you have any opinion as to whether prior to
7 puberty natal males have strength, speed or other
8 athletic advantages over natal females on average?

9 ATTORNEY BORELLI: Objection, form.

10 THE WITNESS: Gosh, there's such a wide
11 variety of humans. And I know you are asking on
12 average. I don't think I feel comfortable answering the
13 question.

14 BY ATTORNEY BROOKS:

15 Q. All right.

16 You have offered the opinion --- we can go back
17 to paragraph 28, I keep referring to the same, that
18 refusing to permit a transgender individual to
19 participate in a sport category corresponding to their
20 gender identity can be or is extremely harmful. From
21 your medical point of view, what do you consider to be
22 the implications of that opinion when it comes to
23 individuals who claim both a male and a female gender
24 identity?

1 ATTORNEY BORELLI: Objection, form.

2 BY ATTORNEY BROOKS:

3 Q. Must they be permitted to play in either
4 category according to their choice.

5 ATTORNEY BORELLI: Objection, form.

6 THE WITNESS: That is a good question. I
7 would have to talk to the individual person to really
8 know what harm they might think --- feel that they are
9 having if they were kept from one versus the other. I
10 think that would be a very individualized question. I
11 can't answer it with my experience.

12 BY ATTORNEY BROOKS:

13 Q. All right.

14 Would you have the same answer with regard to
15 an individual who experiences neither gender identity,
16 neither male or female?

17 ATTORNEY BORELLI: Objection, form.

18 THE WITNESS: So people who identify as a
19 agender, you know, there is such a wide variety there of
20 their life experience, their pubertal experience, their
21 current hormones and what things they might be taking or
22 not taking, where their levels are. I think it --- and
23 you know, again, I think --- you would have to look at
24 the individual person.

1 BY ATTORNEY BROOKS:

2 Q. Is it your opinion, Dr. Adkins, that the only
3 reasonable policy for schools, colleges or athletic
4 leagues would be to consider eligibility for transgender
5 individuals on a case by case basis, taking into account
6 all of the types of complexities you just described?

7 ATTORNEY BORELLI: Objection, form.

8 THE WITNESS: I think that that is
9 completely possible for them to do given the small
10 population that we're talking about. And I think it is
11 reasonable for them to take the time to do that with
12 each individual human.

13 BY ATTORNEY BROOKS:

14 Q. Do you think that such a policy is the only
15 reasonable policy?

16 ATTORNEY BORELLI: Objection, form.

17 THE WITNESS: Yeah, I'm going to venture
18 that, yes.

19 BY ATTORNEY BROOKS:

20 Q. In your view --- as you've testified earlier a
21 bit about the category of gender fluid individuals. You
22 mentioned the term. Are you familiar with that
23 category, concept of gender fluid individuals?

24 ATTORNEY BORELLI: Objection, form.

1 THE WITNESS: I'm aware of the concept.

2 BY ATTORNEY BROOKS:

3 Q. Can you explain for the court what the concept
4 of --- what a gender fluid individual is or what that
5 person experiences?

6 ATTORNEY BORELLI: Objection to form.

7 THE WITNESS: So my experience is that
8 every gender fluid person is different, and I have to
9 actually dig deep when I'm talking to someone who is
10 gender fluid as to what that means. It could mean a
11 wide variety of different experiences.

12 BY ATTORNEY BROOKS:

13 Q. You're not able to describe at all what it mean
14 to be gender fluid?

15 ATTORNEY BORELLI: Objection, form.

16 THE WITNESS: I can give you an example.
17 I can give you more than one example.

18 BY ATTORNEY BROOKS:

19 Q. I'll take an example.

20 A. Okay.

21 For a patient I'm bringing to mind, for that
22 individual they generally might be expressing their
23 gender identity variably on a particular day. Their
24 understanding of their identity is that it shifts a

1 little bit. They sometimes are frilly, like me, very
2 feminine-ish, and on days --- and feel that --- and
3 other days they might wear a suit and tie. And that
4 gender expression may align with their gender identity I
5 guess, to express themselves a different way. It's just
6 a matter that, you know, some days I feel like a girl
7 and some days I don't. And I actually also sometimes
8 have that feeling of, you know, a more girly one day
9 than the other. I don't know. I'm not implying that
10 I'm gender fluid, but that particular person is an
11 example of what might happen for someone who's gender
12 fluid.

13 Q. Let me ask you to find. I told you we'd dig for
14 it again, the Endocrine Society 2017 Guidelines, which
15 are Exhibit 4.

16 A. I'm not saying my experience is the one and
17 only, one all be all.

18 Q. And I'll call your attention to page five,
19 column two?

20 A. I'm sorry, what is that again?

21 Q. Page five, column two. Language looks like
22 this. That's on page five. That's fine.

23 ATTORNEY TRYON: This is Dave Tryon. I
24 think both of you are starting to trail off at times and

1 speak less loudly and it's getting a little bit harder
2 to hear you. If you can both remember to keep your
3 voices up, it would be helpful to me.

4 ATTORNEY BROOKS: We will do our best.
5 Wait until 6:30.

6 BY ATTORNEY BROOKS:

7 Q. Page 3873, column two. And towards the bottom
8 is a discussion of the continuum and individuals who
9 experience both or neither and then a reference that we
10 looked at before about reports of individuals
11 experiencing a continuous and rapid involuntary
12 alternation between a male and female gender identity.
13 Do you see that? It's about eight lines from the
14 bottom.

15 A. On the right?

16 Q. Yes.

17 A. Yeah.

18 Q. And I'm going to focus you on the rapid
19 involuntary alternation between male and female
20 identity. And is it your view --- is it your opinion
21 that unless school or league policy allows such gender
22 fluid individuals to play in the league according to
23 their present gender identity, whatever that might be,
24 that it will do extreme harm to those individuals?

1 ATTORNEY BORELLI: Objection, form.

2 THE WITNESS: So I think that unless you
3 are working with that individual person to do what works
4 for them based on their gender identity, you are likely
5 to do harm.

6 BY ATTORNEY BROOKS:

7 Q. And am I correct that it is your opinion that
8 avoiding harm to students who experience a transgender
9 identity, perhaps a gender fluid identity, is a higher
10 priority than ensuring fairness in competition for those
11 born female?

12 ATTORNEY BORELLI: Objection to form.

13 THE WITNESS: So doing a harm to
14 individuals that are transgender can lead directly to
15 their death. So we're talking about a life and death
16 experience for these individuals. What you are
17 referring to with regard to sports participation in my
18 vision of all of the sports athletics is a rarity of
19 someone dying, and it is not because of the harm policy
20 --- of transgender person.

21 BY ATTORNEY BROOKS:

22 Q. What's the answer to my question?

23 COURT REPORTER: Excuse me.

24 ATTORNEY BORELLI: Objection.

1 COURT REPORTER: I just want to interrupt
2 because the witness cut out during her answer.

3 BY ATTORNEY BROOKS:

4 Q. Well, I'm going to re-ask the question. And
5 we'll both try to speak up and perhaps to some extent
6 the transcript will have to be, you know, cleaned up
7 from the recording. We'll do the best we can. Is it
8 your opinion that avoiding harm to transgender
9 individuals, potentially including gender fluid
10 individuals, is a value that is more important than
11 protecting the fairness and safety for girls and women
12 for those born female in sport?

13 ATTORNEY BORELLI: Objection, form.

14 THE WITNESS: So when we're talking about
15 life and death, that is the ultimate outcome. And I
16 still say that if you're talking about a policy that
17 could cause the death of a human being, that, in my
18 judgment, does rank higher than fairness at that time.

19 BY ATTORNEY BROOKS:

20 Q. And you talked earlier about your assertion that
21 you had patients who have experienced harm as a result
22 of not being permitted to play according to their gender
23 identity. Do you recall that testimony?

24 ATTORNEY BORELLI: Objection, form.

1 THE WITNESS: I do.

2 BY ATTORNEY BROOKS:

3 Q. And do you have specific examples of such
4 patients who experienced increased suicidal ideation
5 specifically as a result of not being permitted to play
6 in athletics according to their gender identity?

7 ATTORNEY BORELLI: Objection, form.

8 THE WITNESS: I do.

9 BY ATTORNEY BROOKS:

10 Q. Tell us about that.

11 ATTORNEY BORELLI: Objection, form.

12 THE WITNESS: Yeah. So one of my
13 patients, for example, had played football. This
14 patient was assigned female at birth, identifying as
15 male in middle school. Really wanted to play in high
16 school and was eventually not allowed to do so, and
17 their depression deepened. They had not had any
18 suicidal ideation before. They had been well affirmed.
19 They were living in their gender identity in every other
20 aspect of their life.

21 And they ended up having to go on
22 medication to make sure that --- to treat that
23 depression in addition to all of the support in the
24 family and teachers were giving with their gender

1 identity.

2 BY ATTORNEY BROOKS:

3 Q. And do you have any knowledge as to whether that
4 individual would have faced serious safety injury risks
5 had that individual, natal female, been permitted to
6 play football at high school level as your patient's
7 male peers matured into full male stature?

8 ATTORNEY BORELLI: Objection to form.

9 THE WITNESS: This particular patient was
10 within the normal range for a male of that age as far as
11 height, weight and BMI, so there wasn't a great
12 disparity with regard to that. That can come up at
13 times with regards to sports participation in
14 consideration with injury. So this particular patient,
15 I would not have had any concern there. Lots of
16 assigned females at birth who are not transgender also
17 play football in high school.

18 BY ATTORNEY BROOKS:

19 Q. Tab 25. Dr. Adkins, do you recall permitting
20 the reporting of and being part of a WNYC podcast back
21 in 2016?

22 A. Yes.

23 Q. Let me mark as Exhibit 14 a two-page kind of
24 introductory page off the WNYC website describing this

1 podcast. The document itself, the posting is dated
2 August 2, 2016. Give me one moment here.

3 ---

4 (Whereupon, Adkins Exhibit 14, 2016
5 Podcast Summary Webpage, was marked for
6 identification.)

7 ---

8 ATTORNEY BROOKS: And let me also mark as
9 Exhibit 15 the transcript of that podcast downloaded off
10 of the WNYC website.

11 ---

12 (Whereupon, Adkins Exhibit 15, 2016
13 Podcast Transcript, was marked for
14 identification.)

15 ---

16 BY ATTORNEY BROOKS:

17 Q. And that --- the title apparently of the podcast
18 is, quote, I'd Rather Have a Living Son than a Dead
19 Daughter. Do you see that?

20 A. I do.

21 Q. And you allowed a reporter from WNYC to come
22 into your office and record various conversations.

23 Am I correct?

24 ATTORNEY BORELLI: Objection, form.

1 THE WITNESS: With the permission of ---
2 the --- everyone involved.

3 BY ATTORNEY BROOKS:

4 Q. To participate and they waived the privacy with
5 regard to anything that wasn't included in the podcast.

6 Am I correct?

7 ATTORNEY BORELLI: Objection to form.

8 THE WITNESS: That would be standard.

9 BY ATTORNEY BROOKS:

10 Q. At least as far as yourself, do you recall doing
11 that?

12 ATTORNEY BORELLI: Objection to form.

13 THE WITNESS: I don't recall. I suspect
14 I would have.

15 BY ATTORNEY BROOKS:

16 Q. And did you yourself review the podcast before
17 it was released for any privacy or accuracy concerns?

18 ATTORNEY BORELLI: Objection, form.

19 THE WITNESS: I don't remember. That's
20 been so long ago.

21 BY ATTORNEY BROOKS:

22 Q. It has been a while. This was 2016. And you
23 had been practicing in this area about how long in 2016?

24 A. In North Carolina?

1 Q. I'm sorry. In this field of treatment of gender
2 --- of individuals suffering gender dysphoria?

3 ATTORNEY BORELLI: Objection, form.

4 THE WITNESS: I started caring for
5 patients who are transgender in --- I think around 2013.

6 BY ATTORNEY BROOKS:

7 Q. Okay.

8 So between two and three years before the time
9 this was recorded.

10 Okay.

11 Let me ask you to look at Exhibit 15, which is
12 to say the transcript. And first page, it indicates and
13 I'll just --- it deals with two clients with names, at
14 least for purposes of the podcast, of Drew Adams and
15 Mark. Do you recall that?

16 ATTORNEY BORELLI: Objection, form.

17 THE WITNESS: I would have to verify.
18 Probably accurate, but ---.

19 BY ATTORNEY BROOKS:

20 Q. Martin shows up on page 13. A couple inches
21 down we skip to the last patient at the end of a long
22 day and then it says recalling this patient Martin.

23 A. I see that.

24 Q. Let's go back and just look at issues relating

1 to Drew Adams. Drew is, if I understand correctly,
2 natal female, identifying at the time of this recording
3 as ---?

4 A. Drew was assigned female at birth and identified
5 as male at this time.

6 Q. And so far as you understand, based on your
7 medical evaluation, Drew is somebody who was
8 chromosomally female.

9 Correct?

10 ATTORNEY BORELLI: Objection to form.

11 THE WITNESS: I don't get to verify their
12 chromosomes. We don't do that.

13 BY ATTORNEY BROOKS:

14 Q. At the time this was recorded, you did have an
15 understanding, did you not, that Drew had female
16 reproductive biology?

17 ATTORNEY BORELLI: Objection, form.

18 THE WITNESS: On my exam at that time
19 Drew had external genitalia that appeared female and
20 secondary sex characteristics typical of someone
21 assigned female at birth.

22 BY ATTORNEY BROOKS:

23 Q. Well, in fact, somebody biologically female.

24 Correct?

1 ATTORNEY BORELLI: Objection.

2 THE WITNESS: Assigned female at birth.

3 BY ATTORNEY BROOKS:

4 Q. Well, let me ask you this. You prescribed
5 hormones for Drew.

6 Am I correct?

7 A. Yes.

8 Q. And you didn't do that without a high level of
9 confidence in your mind as to the biology of Drew's
10 body.

11 Am I correct?

12 ATTORNEY BORELLI: Objection to form.

13 BY ATTORNEY BROOKS:

14 Q. You weren't just based on what somebody happened
15 to be assigned at birth. You believed that Drew was
16 biologically female, did you not?

17 ATTORNEY BORELLI: Objection, form.

18 THE WITNESS: So at the beginning, prior
19 to treating patients, we do look at where their baseline
20 hormones are. So I did have that information as well as
21 an external exam. I didn't have chromosomes or an
22 ultrasound.

23 BY ATTORNEY BROOKS:

24 Q. My question is at the time you prescribed

1 hormones for Drew you believed that Drew was
2 biologically female firmly, did you not?

3 ATTORNEY BORELLI: Objection, form.

4 THE WITNESS: I had no reason at that
5 time with the data in front of my to identify Drew as
6 anything other than assigned female at birth.

7 BY ATTORNEY BROOKS:

8 Q. And you just didn't care what Drew's biology was
9 as you chose hormones to prescribe?

10 ATTORNEY BORELLI: Objection, form.

11 THE WITNESS: I investigated what is
12 necessary to move ahead with that prescription and make
13 it safe for the patient.

14 BY ATTORNEY BROOKS:

15 Q. What was necessary was to determine that
16 biologically Drew was female.

17 Am I correct?

18 ATTORNEY BORELLI: Objection, form.

19 BY ATTORNEY BROOKS:

20 Q. You are going to tell the court that you didn't
21 try to determine whether Drew was biologically male or
22 female?

23 ATTORNEY BORELLI: Objection, form.

24 THE WITNESS: I obtained baseline blood

1 work like I do with every patient, which is recommended
2 by the Endocrine Society that you get baseline hormone
3 levels. I did a physical exam. Not every patient gets
4 to have an ultrasound, a karyotype or a full exon
5 analysis. It's not the way you can practice medicine.

6 BY ATTORNEY BROOKS:

7 Q. Turn with me to page three of the transcript.
8 Two, two and a half inches down, MH, who I believe is
9 the reporter, not somebody working for you but the
10 reporter, says, quote, this is Drew's second time here,
11 closed quote. Do you see that, just two inches down?

12 A. Yeah.

13 Q. It's been quite a few years. Do you believe
14 that that was accurate that what the events that were
15 recorded here were on Drew's second visit to your
16 clinic?

17 ATTORNEY BORELLI: Objection, form.

18 THE WITNESS: It has been so long. To
19 verify it is true I would have to look back at my clinic
20 notes as well as if I even still had it recorded when
21 they were in clinic or not.

22 BY ATTORNEY BROOKS:

23 Q. And do you know, as you sit here today, whether
24 prior to this perhaps second meeting with Drew any

1 psychologist or psychiatrist associated with your new
2 clinic had personally evaluated Drew to confirm the
3 diagnosis of gender dysphoria?

4 ATTORNEY BORELLI: Objection, form.

5 THE WITNESS: Before we start treatment
6 we have our mental health team do an assessment of the
7 patient with regard to finding out their --- any
8 psychological challenges that they may be having and
9 confirm if they have gender dysphoria and confirm the
10 criteria from the DSM --- God, my brain is just tired.
11 From the DSM criteria. And in addition to that, we have
12 a person who is a local mental health provider also
13 perform any evaluation and develop a relationship with
14 the patient prior to starting the treatment.

15 BY ATTORNEY BROOKS:

16 Q. Well, let me break that out. Do you require
17 that a psychologist or psychiatrist associated with Duke
18 confirm a diagnosis of gender dysphoria before you
19 proceed with hormonal interventions?

20 ATTORNEY BORELLI: Objection, form.

21 THE WITNESS: I have a team of mental
22 health providers who work with me and do that
23 assessment. That is part of their standard job. And
24 every patient is evaluated by that team. Sometimes it

1 is a psychiatrist, psychologist. Sometimes it is a
2 different kind of mental health provider.

3 BY ATTORNEY BROOKS:

4 Q. Well, if it is not a psychologist or
5 psychiatrist, on what type of mental health --- what
6 qualifications of mental health providers do you rely to
7 make such a diagnosis before prescribing hormonal
8 interventions?

9 ATTORNEY BORELLI: Objection, form.

10 THE WITNESS: You know, there are
11 Licensed Clinical Social Workers that we work with that
12 are used by Duke in a number of capacities with regard
13 to mental healthcare.

14 BY ATTORNEY BROOKS:

15 Q. Is it your testimony --- I want to be careful on
16 this. Is it your testimony that you are willing to rely
17 on a diagnosis by a social worker with no medical,
18 psychological degree before prescribing a hormonal
19 intervention?

20 ATTORNEY BORELLI: Objection, form.

21 THE WITNESS: So the mental health
22 providers that I use have master's degree education in
23 care for patients in this area and have ongoing
24 continuing medical education with regard to their

1 ability to asses the mental health of a patient in front
2 of them.

3 BY ATTORNEY BROOKS:

4 Q. That would be a --- a Master's in social work.

5 Correct?

6 A. Often it's a Master's in social work. Also have
7 people who have Master's in public health in addition I
8 should say.

9 Q. And so if such any evaluations was done by a
10 mental health professional associated with Duke, that
11 would have been at Drew's first visit, not at the visit
12 that was the subject of this podcast recording?

13 ATTORNEY BORELLI: Objection, form.

14 THE WITNESS: At that time it could have
15 been done physically at the first visit. Sometimes we
16 have had them come on a different day than their visit
17 with me. So it is possible it could have been a
18 different day. I just don't remember.

19 BY ATTORNEY BROOKS:

20 Q. Okay.

21 Do you ever rely on the diagnosis of an
22 individual's mental health worker not associated with
23 Duke as an adequate basis to prescribe hormonal
24 interventions?

1 ATTORNEY BORELLI: Objection, form.

2 THE WITNESS: Our clinic policy is to
3 have someone outside of Duke as well as someone inside
4 of Duke.

5 BY ATTORNEY BROOKS:

6 Q. So you may recall --- do you recall that Drew
7 and his mother had driven up from Florida for this
8 meetings?

9 ATTORNEY BORELLI: Objection, form.

10 THE WITNESS: I do remember that.

11 BY ATTORNEY BROOKS:

12 Q. And do you sometimes consider diagnosis given by
13 mental --- for purposes of proceeding with hormonal
14 interventions?

15 ATTORNEY BORELLI: Objection, form.

16 THE WITNESS: If they are licensed to
17 practice in that area or certified in their state, that
18 is what we rely on.

19 BY ATTORNEY BROOKS:

20 Q. At the top of page two --- and again, this is
21 the voice of the reporter, so I want to check it with
22 you. It says, the end of the first full paragraph, that
23 Drew and his mom are driving eight hours from
24 Jacksonville, Florida, to get here because North

1 Carolina is also home to one of the only clinics in the
2 south that treats transgender kids. Do you see that?

3 A. I do.

4 Q. And in your understanding was that true in 2016,
5 that you here had one of the only clinics in the south
6 that treated transgender kids?

7 ATTORNEY BORELLI: Objection, form.

8 THE WITNESS: We were one of a few.

9 BY ATTORNEY BROOKS:

10 Q. And they had driven all the way to North
11 Carolina from Florida precisely because whatever mental
12 health providers they were seeing in Florida didn't have
13 expertise in this area.

14 Is that correct?

15 ATTORNEY BORELLI: Objection, form.

16 THE WITNESS: They didn't drive here to
17 see a mental health provider. They drove here to see me
18 as an endocrinologist.

19 BY ATTORNEY BROOKS:

20 Q. I apologize. Whatever professionals were
21 advising them in Florida didn't have expertise in this
22 area?

23 ATTORNEY BORELLI: Objection, form.

24 THE WITNESS: With regard to hormonal

1 management.

2 BY ATTORNEY BROOKS:

3 Q. What steps, if any, did you take to give
4 yourself comfort that any comorbidities that might be
5 --- might confound the diagnosis of transgenderism had
6 been appropriately addressed before you prescribed
7 hormones for Drew?

8 ATTORNEY BORELLI: Objection to form.

9 THE WITNESS: I mean, I would have to
10 look back at my notes specifically to see exactly what
11 we had in the record. Our policy again is to have
12 someone who has had a relationship with the patient
13 outside of Duke Clinic that states that they have well
14 managed issues with regard to their mental health and
15 are prepared and safe to move forward with gender
16 affirming hormones.

17 BY ATTORNEY BROOKS:

18 Q. As a matter of policy in your clinic do you
19 insist on a diagnosis that will tell you whether or not
20 this patient suffers from autism of any sort?

21 ATTORNEY BORELLI: Objection, form.

22 THE WITNESS: We do require that they
23 have a screening that is performed within our clinic for
24 any potential signs or symptoms of autism.

1 BY ATTORNEY BROOKS:

2 Q. And if you identify that a patient does have
3 some signs or symptoms of autism what significance does
4 that have as to how quickly or whether you are willing
5 to proceed with hormonal interventions?

6 ATTORNEY BORELLI: Objection to the form.

7 THE WITNESS: So again, every patient is
8 different. Autism is a spectrum, as it's described
9 autism spectrum disorder, and so you have to figure out
10 each patient's understanding of their gender identity,
11 what's going on in their life and if they're ready.

12 BY ATTORNEY BROOKS:

13 Q. Do you have any professional opinion as to
14 whether autism itself can cause a patient to feel
15 uncomfortable with their identity?

16 ATTORNEY BORELLI: Objection to form.

17 THE WITNESS: Their whole identity?

18 BY ATTORNEY BROOKS:

19 Q. Yes.

20 A. I ---.

21 ATTORNEY BORELLI: Objection ---.

22 THE WITNESS: Yeah, I don't know if I
23 have seen any reports about their whole identity being
24 called into question just because they have autism.

1 BY ATTORNEY BROOKS:

2 Q. Do you have any professional opinion as to
3 whether autism itself can cause individuals to feel
4 alienated from or disassociated with their gender
5 identity ---

6 ATTORNEY BORELLI: Objection, form.

7 BY ATTORNEY BROOKS:

8 Q. --- or I should say the gender identity
9 associated with their natal sex?

10 ATTORNEY BORELLI: Objection to form.

11 THE WITNESS: With the information that I
12 have worked with on our autism team at Duke is that, you
13 know, it can take a little longer for people with autism
14 to truly understand their gender identity. So we do
15 take care there. That's why we screen.

16 BY ATTORNEY BROOKS:

17 Q. I would like to play a clip from this podcast
18 that includes your voice, the reporter's voice, Drew's
19 voice. I think it will come through loud and clear.
20 I'm optimistic --- for those of you ---.

21 ATTORNEY BORELLI: While you're settling
22 this, will the words from the recording, do they appear
23 in the transcription.

24 ATTORNEY BROOKS: They do. I was about

1 to say that for everybody's benefit.

2 ATTORNEY BORELLI: Thank you, Counsel.

3 ATTORNEY BROOKS: Now, I'm thinking.

4 That has to be live. All right. So that's unmuted.

5 VIDEOGRAPHER: You said one?

6 ATTORNEY BROOKS: What's that?

7 VIDEOGRAPHER: You said one?

8 ATTORNEY BROOKS: But I need to say on
9 the record and tell people --- can the court reporter
10 here me.

11 COURT REPORTER: Yes.

12 ATTORNEY BROOKS: The clip that I'm about
13 to play appears on page four of the transcript that is
14 marked Exhibit 15 and it makes up kind of the center
15 two-thirds of the transcript. All the words that you
16 will hear or perhaps won't hear very well appear on the
17 transcript. We're going to listen to clip one here.

18 ---

19 (WHEREUPON, PODCAST AUDIO WAS PLAYED.)

20 ---

21 BY ATTORNEY BROOKS:

22 Q. The narrator says that Drew's only question was,
23 quote, when can I start testosterone, and you responded
24 today, sound good, yeah, all right. Is that consistent

1 with your recollection of what happened that day?

2 ATTORNEY BORELLI: Objection, form.

3 THE WITNESS: Yes.

4 BY ATTORNEY BROOKS:

5 Q. Was that your voice?

6 A. That was my voice.

7 Q. Okay.

8 And did you know before you came into the room
9 that Drew's goal was to walk out with a testosterone
10 injection or a prescription for a testosterone
11 injection?

12 ATTORNEY BORELLI: Objection to form.

13 THE WITNESS: You know, I don't remember.
14 I don't remember what I knew before in walked in the
15 door. Sometimes I do. Sometimes I don't.

16 BY ATTORNEY BROOKS:

17 Q. Now, I want to be fair. This is --- these are
18 clips and they're carefully done, so I can't be sure
19 whether there are things in between.

20 A. Correct.

21 Q. Do you have any recollection as to any
22 discussion or any further evaluation that happened
23 between, hey, how are you, and your voice, and answering
24 the question when can I start, today?

1 ATTORNEY BORELLI: Objection, form.

2 THE WITNESS: So most typically, before I
3 walk into a room I have reviewed the patient's medical
4 record. I have reviewed their letter from their mental
5 health provider. And I have reviewed any laboratory
6 evaluation that I have received from them prior and
7 generally review their records. So I would come into a
8 visit with that sort of fresh in my mind.

9 BY ATTORNEY BROOKS:

10 Q. So it is consistent with your recollection that
11 on Drew's second meeting with you, you walked into the
12 room having made up your mind to give Drew testosterone?

13 ATTORNEY BORELLI: Objection, form.

14 THE WITNESS: Based on the words that are
15 here, that would be --- I would have reviewed the
16 information that I needed to know that that would be
17 safe.

18 BY ATTORNEY BROOKS:

19 Q. And in between walking in the room and telling
20 Drew today, yay, all right, did you make any further
21 inquiry about whether Drew in the last --- since he last
22 saw you had been suffering from any sort of depression?

23 ATTORNEY BORELLI: Objection to form.

24 THE WITNESS: So typically that is part

1 of our visit. It's not necessarily part that I would
2 do. And we also have forms that they fill out that does
3 an assessment of depression prior to me walking in the
4 room.

5 BY ATTORNEY BROOKS:

6 Q. Did you ensure that an assessment had been done
7 that evaluated the strengths and weaknesses of Drew's
8 relationship with Drew's family?

9 ATTORNEY BORELLI: Objection, form.

10 THE WITNESS: The mental health
11 evaluation does include walking through parent
12 relationships, school relationships, teacher
13 relationships and finding out where those are.

14 BY ATTORNEY BROOKS:

15 Q. Did you feel that you, yourself, needed to have
16 any understanding, for instance, of Drew's relationship
17 with Drew's father before you proceeded to prescribe
18 cross sex hormones?

19 ATTORNEY BORELLI: Objection, form.

20 THE WITNESS: I would want to know where
21 their relationships are.

22 BY ATTORNEY BROOKS:

23 Q. So Drew's mother attended. What steps did you
24 take to find out what Drew's relationship with Drew's

1 father was?

2 ATTORNEY BORELLI: Objection, form.

3 THE WITNESS: I don't remember. I would
4 have to look back.

5 BY ATTORNEY BROOKS:

6 Q. And does your clinic before prescribing hormonal
7 interventions make sure that an overall psychotherapy
8 treatment plan has been prepared to diagnose and address
9 any other psychological or social difficulties suffered
10 by the patient?

11 ATTORNEY BORELLI: Objection to form.

12 THE WITNESS: So you know, I follow the
13 guidelines that say that we should have any of the
14 mental health issues well managed and that's why we use
15 --- have our patients have a mental health provider and
16 that's why we have them tell us that in writing.

17 BY ATTORNEY BROOKS:

18 Q. So I'm going to play a second clip that picks up
19 exactly where we left off on the transcript, that is at
20 the very bottom of page five and continuing halfway ---
21 I'm sorry, the very bottom of page four and continuing
22 halfway down page five. If you would.

23

24

1 (WHEREUPON, PODCAST AUDIO WAS PLAYED.)

2 ---

3 ATTORNEY BROOKS: That was background
4 noise. I thought it was coming through here. I
5 apologize. Just start it again. My mistake.

6 ---

7 (WHEREUPON, PODCAST AUDIO WAS PLAYED.)

8 ---

9 BY ATTORNEY BROOKS:

10 Q. Dr. Adkins, do you believe that the basic
11 narrative here accurately describes what happened, that
12 you came in, you spoke with Drew, you went out, and
13 while you were out one of your aides read risk
14 disclosures for consent to Drew and Drew's mother?

15 ATTORNEY BORELLI: Objection, form.

16 THE WITNESS: That is part of it.

17 BY ATTORNEY BROOKS:

18 Q. And the narrator said at the beginning
19 explaining this process that there were still, as of
20 2016, a lot of unknowns about what these hormones will
21 do long term. Was that an accurate statement at the
22 time in your opinion?

23 ATTORNEY BORELLI: Objection, form.

24 THE WITNESS: We've learned a lot more.

1 We have got however many more years, what, five more
2 years at least of information since then. You can't
3 know what every single thing that every drug is going to
4 do forever.

5 BY ATTORNEY BROOKS:

6 Q. One of the things that you included at that time
7 in your cautions or disclosures was that taking these
8 cross sex hormones might prevent a patient who had ---
9 was a natal female from ever being able to get pregnant,
10 even if Drew stopped taking testosterone in the future.

11 Correct?

12 ATTORNEY BORELLI: Objection, form. One
13 other just piece of clarity for the record, I want to
14 make sure that it is clear that the transcript and
15 recording is not a complete recording of the entire
16 visit.

17 ATTORNEY BROOKS: I have made that clear
18 I think.

19 ATTORNEY BORELLI: Thank you, Counsel.

20 BY ATTORNEY BROOKS:

21 Q. My question is one of your disclosures in 2016
22 was that the administration of testosterone to a natal
23 female might mean that that individual would not ever be
24 able to get pregnant even should the patient stop taking

1 testosterone at a future date.

2 Correct?

3 ATTORNEY BORELLI: Objection, form.

4 THE WITNESS: Correct.

5 BY ATTORNEY BROOKS:

6 Q. And that is still part of your disclosure today;
7 is that correct?

8 A. That's part of it. We actually have more
9 studies that show actually an equal fertility rate for
10 our transgender males who have been on testosterone and
11 come off and choose to get pregnant as their cisgender
12 peers, their assigned females at birth who've never been
13 through any testosterone treatment.

14 Q. Because of the present science you still make
15 exactly the same caution in your warnings to patients
16 before prescribing testosterone.

17 Correct?

18 ATTORNEY BORELLI: Objection to form.

19 THE WITNESS: I do.

20 BY ATTORNEY BROOKS:

21 Q. And so the sequence is that you said with regard
22 to administering testosterone, which you cautioned or
23 clinic cautioned could be potentially sterilizing, you
24 as the doctor said to Drew, sound good, yeah, all right.

1 And then you left the room while somebody else read
2 warnings and disclosures.

3 Is that right?

4 ATTORNEY BORELLI: Objection, form.

5 THE WITNESS: That doesn't --- is that
6 what the sequence was in this report? It looks like
7 that I also make sure that the patients have adequate
8 time to answer questions. I usually give them this form
9 ahead of the visit so they can review it and in case
10 their reading is their better method versus verbal.
11 That's why we do it in two different ways as far as
12 their learning style. We make every effort to help make
13 sure that our patients understand.

14 ATTORNEY BORELLI: We have been going a
15 while. Can we take a break soon? I think we should.

16 ATTORNEY BROOKS: Fairly soon. We'll
17 finish this line of questioning and this clip.

18 BY ATTORNEY BROOKS:

19 Q. You yourself didn't ever sit down and talk
20 through known or potential side effects with either the
21 child or the mother in this case, did you?

22 ATTORNEY BORELLI: Objection, form.

23 THE WITNESS: I don't remember it
24 specifically every visit from 2016 and exactly what

1 happened.

2 BY ATTORNEY BROOKS:

3 Q. As a matter ---.

4 ATTORNEY BORELLI: Counsel, I'm sorry, I
5 think I heard the witness say a moment ago that a break
6 would be good. Why don't we break here? Can we come
7 back in say ten minutes?

8 ATTORNEY BROOKS: We can say that or I
9 can finish this paragraph.

10 ATTORNEY BORELLI: Why don't we break
11 now. We've been going a while. Thank you.

12 VIDEOGRAPHER: Going off the record. The
13 current time reads 2:27 p.m. Eastern Standard Time.

14 OFF VIDEO

15 ---

16 (WHEREUPON, A PAUSE IN THE RECORD WAS HELD.)

17 ---

18 ON VIDEO

19 VIDEOGRAPHER: We're back on the record.
20 Current time reads 2:43 p.m. Eastern Standard Time.

21 BY ATTORNEY BROOKS:

22 Q. Dr. Adkins, in dealing with Drew, you have a
23 social worker read the disclosures, the warnings. Did
24 you, yourself, ever present to Drew options for

1 fertility preservation?

2 ATTORNEY BORELLI: Objection, form.

3 THE WITNESS: Yes, that is a conversation
4 I have with my patients.

5 BY ATTORNEY BROOKS:

6 Q. You, yourself, have that conversation?

7 A. I do.

8 Q. Let's --- and did you explain --- I see that the
9 disclosure --- we heard the disclosure that it's ---
10 using testosterone to appear more masculine is off label
11 use. Is that part of your standard disclosures?

12 ATTORNEY BORELLI: Objection, form.

13 BY ATTORNEY BROOKS:

14 Q. Do you explain to your patients that the fact
15 that it is off label means that no studies that
16 establish safety of use of testosterone for that purpose
17 at the level as would be required for FDA approval have
18 been done?

19 ATTORNEY BORELLI: Objection, form.

20 THE WITNESS: No, that wouldn't be an
21 accurate statement. Those studies can be done. They
22 just haven't been presented by the company manufacturing
23 the medication to the FDA to try and get that
24 certification from the FDA.

1 BY ATTORNEY BROOKS:

2 Q. Have you, yourself, ever participated as a
3 physician in a so-called phase one clinica trial?

4 ATTORNEY BORELLI: Objection to form.

5 THE WITNESS: So phase one typically is
6 dose related. I have not done those. I have done phase
7 two, phase three and then after market.

8 BY ATTORNEY BROOKS:

9 Q. Phase one is, among other things, required to
10 establish safety.

11 Am I correct?

12 ATTORNEY BORELLI: Objection, form.

13 THE WITNESS: That is part of the
14 objective of a phase one study.

15 BY ATTORNEY BROOKS:

16 Q. And indeed, it is a required part of the
17 objective.

18 Right?

19 ATTORNEY BORELLI: Objection, form.

20 THE WITNESS: Yes.

21 BY ATTORNEY BROOKS:

22 Q. And to your knowledge, has any study of safety
23 of administering testosterone for the purpose of
24 appearing more masculine in natal females ever been done

1 at a level of rigor that could satisfy FDA requirements?

2 ATTORNEY BORELLI: Objection, form.

3 THE WITNESS: So I don't have the FDA
4 standards right in front of me. I have, you know, read
5 articles that report outcomes and side effects and
6 safety profiles. There are other testosterone --- there
7 are testosterone products on the market that are FDA
8 approved for using cisgender females.

9 BY ATTORNEY BROOKS:

10 Q. Do you know whether any safety study has ever
11 been done for administration of testosterone to natal
12 females for the purpose of appearing more masculine at a
13 level of rigor that could satisfy FDA requirements?

14 ATTORNEY BORELLI: Objection, form.

15 THE WITNESS: I can't answer the question
16 without, you know --- I would have to really look at the
17 indications, the FDA rules.

18 BY ATTORNEY BROOKS:

19 Q. Okay.

20 Let's listen to a third and final clip. This
21 one begins with a sentence the last one ended with on
22 page five and runs just onto page six, I believe. End
23 of page five. Let's hear that.

24

1 you want to hear it again you can.

2 A. It's not labeled that way.

3 Q. Well, yay, yay is labeled you?

4 A. Yay, yay is labeled me? Okay.

5 Q. Doctor A?

6 A. It's really confusing because it's ---.

7 Q. Let's do this. Let's listen to this one more
8 time.

9 A. There is confusion.

10 Q. I want you to listen --- don't trust the labels.
11 Listen to the voice on happy drugs. They may be ---.

12 ---

13 (WHEREUPON, PODCAST AUDIO WAS PLAYED.)

14 ---

15 BY ATTORNEY BROOKS:

16 Q. Whose voice says happy drugs?

17 A. That sounded like Drew.

18 Q. Okay.

19 So the labeling you believe is correct. I just
20 wanted to double check that.

21 Are you, as a physician, in light of all of the
22 disclosures that have just been made about potential
23 side effects, potential harmful effects, were you
24 comfortable with the child referring to cross sex

1 hormones as happy drugs?

2 ATTORNEY BORELLI: Objection, form.

3 THE WITNESS: So if you will recall, we
4 use the medication to decrease dysphoria, which is a
5 discomfort, and to improve depression. So any
6 medication that would relieve those things could be
7 described as a happy drug. I'm okay with that.

8 BY ATTORNEY BROOKS:

9 Q. And after Drew says happy drug you said yay,
10 yay. Are you comfortable that's consistent with your
11 role as a doctor in light of potential downsides and
12 side effects of this treatment and this child's life to
13 serve the role of a cheerleader saying yay, yay?

14 ATTORNEY BORELLI: Objection. Counsel, I
15 just want to note for the record it's not clear from
16 that recording that both yays are in the same voice.
17 That's actually not what I heard.

18 ATTORNEY BROOKS: If you have an
19 objection you can raise it later.

20 ATTORNEY BORELLI: I need to make my
21 record now, Counsel.

22 ATTORNEY BROOKS: No, you need to raise
23 your objection now. You get to discuss it further in
24 front of the court.

1 BY ATTORNEY BROOKS:

2 Q. I will re-ask my question. Do you consider it
3 consistent with your role as a physician, in light of
4 the potential downsides and side effects from cross sex
5 hormones for this child, for you to play the role of
6 cheerleader saying yay?

7 ATTORNEY BORELLI: Objection, form.

8 THE WITNESS: So in my job as a physician
9 I often am helping motivate my patients improve their
10 overall health. And in that way I often sound like I am
11 a cheerleader and I am trying to help them believe in
12 themselves and understand and feel good moving forward
13 with medication treatments to have the best likelihood
14 of success. So I may say yay.

15 VIDEOGRAPHER: Excuse me. You got cut
16 out there in the middle of that --- in the middle of
17 your answer.

18 THE WITNESS: Okay.

19 Do you want me to start over?

20 ATTORNEY BROOKS: Who was that?

21 ATTORNEY WILKINSON: That was the court
22 reporter. I can make a recording if everyone is happy
23 with my phone just on the table so we could refer to
24 that later if that's useful if we're concerned about the

1 audio cutting out.

2 ATTORNEY BROOKS: There is no harm in a
3 backup recording. Voices will be identifiable. If you
4 want to set it there by that speaker.

5 ATTORNEY WILKINSON: If you're
6 comfortable.

7 ATTORNEY BORELLI: I just want to check
8 --.

9 COURT REPORTER: Who is talking right
10 now. I'm sorry, who is --- who is talking about their
11 phone. I don't understand. Like, I don't know who's
12 speaking.

13 ATTORNEY BROOKS: Just now my colleague
14 Lawrence Wilkinson is proposing to set his iPhone on
15 record by the speaker here so there will be a backup
16 onsite recording in case anything is dropped over the
17 internet. And that will be made available both to those
18 who are listening and to the court reporter service.
19 Address some of the concerns. So let's fire that up and
20 it will be there.

21 BY ATTORNEY BROOKS:

22 Q. I will continue with my questioning. Did it
23 cause you any concern that in referring --- by referring
24 to a testosterone injection as happy drugs that that was

1 an indication that young Drew was not taking seriously
2 the 20 minutes' worth of cautions and warnings that had
3 just been read?

4 ATTORNEY BORELLI: Objection, form.

5 THE WITNESS: So given that the
6 medication is used to decrease dysphoria and improve
7 depressive symptoms, in that way it does make someone
8 happier. And I have no issue with a patient who is
9 using a general reference as happy drugs in that that is
10 part of what will happen with the medication. I didn't
11 have any concerns with regard to the fact that Drew may
12 not have gotten everything he needed to understand what
13 he was going into going forward with this medication.

14 BY ATTORNEY BROOKS:

15 Q. Let's back up to page four of the transcript.
16 And we're not going to listen to any ore clips.
17 Everybody will be happy to know perhaps.

18 ATTORNEY BORELLI: It's unstable.

19 THE WITNESS: There we go.

20 BY ATTORNEY BROOKS:

21 Q. Okay.

22 And towards the top of page four, the second
23 paragraph, the narrator --- and this is not you speaking
24 and it is not Drew's mother speaking. The narrator says

1 she doesn't like talking about what Drew's life was like
2 before he started transitioning. But when I asked her
3 how she knew living as a boy was the right choice for
4 Drew, she was blunt. She said I'd rather have a living
5 son than a dead daughter. Do you see that?

6 A. I do.

7 Q. Did you ever tell Drew's mother that that was
8 the choice that she faced, between a living son and a
9 dead daughter?

10 ATTORNEY BORELLI: Objection to form.

11 THE WITNESS: I would not have used that
12 phrase. I would have discussed the risk of suicidality.

13 BY ATTORNEY BROOKS:

14 Q. Did you ever hear Drew's mother say she
15 understood that was the choice she faced, between a
16 living son and a dead daughter?

17 ATTORNEY BORELLI: Objection, form.

18 THE WITNESS: You know, I have heard it
19 since then because of the podcast, so I can't remember
20 if I heard it before then or not. I don't recall
21 hearing it before then.

22 BY ATTORNEY BROOKS:

23 Q. When you saw the title to the podcast did you
24 call WNYC and express any concern that that title could

1 be misleading?

2 ATTORNEY BORELLI: Objection, form.

3 THE WITNESS: I did not.

4 BY ATTORNEY BROOKS:

5 Q. Have you ever consulted research on the rate of
6 suicide among preadolescents for any purpose?

7 ATTORNEY BORELLI: Objection to form.

8 BY ATTORNEY BROOKS:

9 Q. In any category?

10 A. Repeat the question, please.

11 Q. Have you ever consulted research or data about
12 the rate of suicide among preadolescents, period?

13 ATTORNEY BORELLI: Objection, form.

14 THE WITNESS: Preadolescents, have I
15 consulted research on suicidality on preadolescents, so
16 before puberty. Not in a while.

17 BY ATTORNEY BROOKS:

18 Q. You are aware, are you not, that incidences of
19 actual suicide are extremely rare in individuals of all
20 categories before puberty?

21 ATTORNEY BORELLI: Objection, form.

22 THE WITNESS: That sounds consistent with
23 the leading causes that I recall for death before
24 puberty.

1 BY ATTORNEY BROOKS:

2 Q. And you, yourself, are not aware of a single
3 case of suicide by a preadolescent gender dysphoria
4 patient that has come to your clinic?

5 ATTORNEY BORELLI: Objection, form.

6 THE WITNESS: No.

7 BY ATTORNEY BROOKS:

8 Q. And have you consulted any research on the rate
9 of actual suicide by children suffering from gender
10 dysphoria under the age of 15?

11 ATTORNEY BORELLI: Objection, form.

12 THE WITNESS: Have I? Yes.

13 BY ATTORNEY BROOKS:

14 Q. And what did that --- what source do you have in
15 mind when you say that?

16 ATTORNEY BORELLI: Objection, form.

17 THE WITNESS: Again, I have trouble with
18 remembering and there is a wide variety of reports, some
19 as --- from 25 to 30 percent, some as high as 40
20 percent. And those are suicide attempts, as I recall,
21 which means that the folks that died wouldn't have even
22 been identified.

23 BY ATTORNEY BROOKS:

24 Q. Well, you are aware that there's a very wide

1 statistical gap between suicide attempts and suicides.

2 Correct?

3 ATTORNEY BORELLI: Objection to form.

4 THE WITNESS: There is some variation
5 between suicide attempts and what was the word, suicide
6 ideation, yeah.

7 BY ATTORNEY BROOKS:

8 Q. No. What I said is there is a very wide gap
9 between suicide attempts and actual completed suicide?

10 ATTORNEY BORELLI: Objection, form.

11 THE WITNESS: There is a gap between.
12 Not every one who attempts. Otherwise, there wouldn't
13 be a difference in the name.

14 BY ATTORNEY BROOKS:

15 Q. In fact, you know as a matter of professional
16 expertise that it is a very wide gap, do you not?

17 ATTORNEY BORELLI: Objection.

18 THE WITNESS: I would have to look at the
19 literature, at what the numbers look like and describing
20 it why is an opinion.

21 BY ATTORNEY BROOKS:

22 Q. Has any patient of the 500 under your care ever
23 committed suicide at an age younger than 14?

24 ATTORNEY BORELLI: Objection, form.

1 THE WITNESS: Excuse me. No.

2 BY ATTORNEY BROOKS:

3 Q. Have you followed up so that you have current
4 information about Drew's mental, physical and social
5 health as of today, which would be about age 21?

6 ATTORNEY BORELLI: Objection, form.

7 THE WITNESS: Drew's no longer my
8 patient, has transitioned to adult care. That's not
9 what I do, so I don't have access to that.

10 BY ATTORNEY BROOKS:

11 Q. What procedures do you have in place, if any, in
12 your clinic to follow up long term with those whom you
13 have prescribed puberty blockers or cross sex hormones
14 for?

15 ATTORNEY BORELLI: Objection, form.

16 THE WITNESS: So you know, here at Duke
17 we have a multidisciplinary team. As --- I don't know
18 if I mentioned them before. It includes a wide variety
19 of individuals. And that group discusses every month
20 our patients, any concerns or questions. In addition,
21 that group has put together a registry that starts when
22 they come to my clinic and we follow their health, their
23 mental health through the time that they are in our
24 clinic and then when --- oops. Sorry. And then when

1 they are adults transitioning to our adult care team.
2 And in that way I'm able to keep up with those patients
3 who remain at Duke for adult care.

4 BY ATTORNEY BROOKS:

5 Q. So you have been practicing this field I think
6 you said since about 2013. And the patients that you
7 saw let's say in 2013, 2014, 2015, I think you said most
8 of your patients presented older than age --- I don't
9 recall exactly. Your average presentation is older than
10 13?

11 ATTORNEY BORELLI: Object to the form.

12 THE WITNESS: Yes.

13 ATTORNEY BORELLI: You got to pause so I
14 can get in an objection.

15 THE WITNESS: Oh, yeah. Yeah.

16 BY ATTORNEY BROOKS:

17 Q. So --- yeah. So those patients on average are
18 now in their upper teens or perhaps 20?

19 ATTORNEY BORELLI: Objection, form.

20 THE WITNESS: Let's see. I have patients
21 who are older than that. I'm not sure of an average. I
22 have not calculated an average.

23 BY ATTORNEY BROOKS:

24 Q. Do you have any procedures in place to attempt

1 to monitor the mental health of your patients five years
2 after you first prescribe puberty blockers or cross sex
3 hormones?

4 ATTORNEY BORELLI: Objection, form.

5 THE WITNESS: The patients that remain
6 within our registry do have regular mental health
7 follow-up. We have a team on the adult side as well in
8 both of the two clinics that we work with.

9 BY ATTORNEY BROOKS:

10 Q. What percentage of your patients that you
11 yourself have authorized cross sex hormones do you have
12 access to data about their mental health five years
13 after initiation of hormone treatment?

14 ATTORNEY BORELLI: Objection, form.

15 THE WITNESS: Some are still present in
16 the clinic. I would have access to those. You know,
17 I'm not supposed to access records specifically if
18 they're no longer in my care. The provider can reach
19 out to me with concerns and have a very close
20 relationship with the adult providers and they do ask me
21 questions about some of those. So in that way I would
22 have access as well as when we calculate on a population
23 base within our registry any outcomes there.

24 BY ATTORNEY BROOKS:

1 Q. As a matter of research, has --- have you or
2 anybody associated with your clinic attempted a
3 follow-up survey or systematic series of interviews of
4 all patients who were prescribed hormones within, for
5 instance, some particular time period?

6 ATTORNEY BORELLI: Objection, form.

7 THE WITNESS: So we currently are
8 enrolling patients in that study. It's not complete.

9 BY ATTORNEY BROOKS:

10 Q. As we sit here today, you don't have any
11 systematic reasonably thorough information on the mental
12 health condition of let's say patients for whom you
13 first prescribed hormonal interventions five years ago.

14 Is that correct?

15 ATTORNEY BORELLI: Objection. Objection
16 to form.

17 THE WITNESS: I would consider, you know,
18 a registry with research based systematic method.

19 BY ATTORNEY BROOKS:

20 Q. A registry with research based ---?

21 A. That is research based is a systematic program
22 to do that and find out follow-up.

23 Q. What do you mean by registry that it is research
24 based?

1 A. A registry is a list of patients who are
2 enrolled in a study, if it's done as a research
3 protocol. And within that registry, you collect
4 information that you choose to record that's important
5 and then you follow that over time in a systematic way.

6 ATTORNEY BROOKS: Let me grab tab 29 ---
7 let me mark as Exhibit 16 a document previously
8 designated as tab 29, which is article entitled --- I
9 should say a newspaper article entitled The Mental
10 Health Establishment is Failing Trans Kids by Laura
11 Edwards Leeper and Erica ---.

12 ---
13 (Whereupon, Adkins Exhibit 16, 2021
14 Washington Post Article, was marked for
15 identification.)

16 ---

17 BY ATTORNEY BROOKS:

18 Q. And Dr. Adkins, am I correct that this in the
19 Washington Post came out in November of 2021 stirred up
20 quite a bit of discussion within your profession?

21 ATTORNEY BORELLI: Objection, form.

22 THE WITNESS: I understand that there was
23 an article by Laura Edwards Leeper that there was a lot
24 of conversation around. I don't know if it was this

1 one. It is possible.

2 BY ATTORNEY BROOKS:

3 Q. Did you read this?

4 A. I haven't read this article.

5 Q. There was a lot of conversation around a recent
6 article by Dr. Edwards Leeper and Dr. Anderson but you
7 didn't bother to read it?

8 ATTORNEY BORELLI: Objection to form.

9 THE WITNESS: I have had discussions with
10 my colleagues around the substance. I haven't had the
11 time to read it.

12 BY ATTORNEY BROOKS:

13 Q. Have you had professional interactions in the
14 past with Dr. Edwards Leeper?

15 ATTORNEY BORELLI: Objection, form.

16 THE WITNESS: It's possible that we
17 taught at a same conference once, but I don't recall
18 ever having a conversation.

19 BY ATTORNEY BROOKS:

20 Q. And have you had professional interactions with
21 Dr. Anderson?

22 ATTORNEY BORELLI: Objection, form.

23 THE WITNESS: I have not.

24 BY ATTORNEY BROOKS:

1 Q. Are you generally aware of Dr. Edwards Leeper's
2 reputation in the field?

3 ATTORNEY BORELLI: Objection, form.

4 THE WITNESS: Yes.

5 BY ATTORNEY BROOKS:

6 Q. How would you describe that reputation at least
7 prior to publication of this article?

8 ATTORNEY BORELLI: Objection, form.

9 THE WITNESS: In general, I would not
10 necessarily say that it has changed. People have
11 respect for Dr. Edwards Leeper and her publications in
12 general. I don't know about specific ---.

13 BY ATTORNEY BROOKS:

14 Q. People generally have respect for her
15 publications?

16 A. Generally. I don't know about every one.

17 Q. Sure. Were you invited to participate as a
18 member of the committee to revise the WPATH so-called
19 standards of care relating to treatment of transgender
20 individuals?

21 ATTORNEY BORELLI: Objection, form.

22 THE WITNESS: I was.

23 BY ATTORNEY BROOKS:

24 Q. Are you doing that?

1 A. No.

2 Q. And did you participate in the task force for
3 the American Psychological Association, which developed
4 guidelines for practice guidelines for work with
5 transgender individuals?

6 ATTORNEY BORELLI: Objection, form.

7 THE WITNESS: I have not participated in
8 that, no.

9 BY ATTORNEY BROOKS:

10 Q. Okay.

11 And let me mark the next one, which is an
12 article that consists of an interview with Dr. Anderson.
13 This I will mark as Exhibit 17?

14 ---

15 (Whereupon, Adkins Exhibit 17, Anderson
16 Interview, was marked for
17 identification.)

18 ---

19 BY ATTORNEY BROOKS:

20 Q. And I believe I asked if you knew her or are you
21 familiar with the reputation of Dr. Anderson, Dr. Laura
22 Anderson?

23 ATTORNEY BORELLI: Objection, form.

24 THE WITNESS: Actually, no.

1 BY ATTORNEY BROOKS:

2 Q. So as a representation there I know that Dr.
3 Anderson is transgender, is a natal male who's been
4 living with a female gender identity for many years.
5 That you don't know about one way or the other?

6 ATTORNEY BORELLI: Objection, form.

7 THE WITNESS: I do not know that.

8 BY ATTORNEY BROOKS:

9 Q. Okay.

10 Let me take you back to Exhibit --- sorry, what
11 was the first one we marked? Was it 17 and 18 or 16 and
12 17?

13 ATTORNEY WILKINSON: Sixteen (16) and 17,
14 16 and 17.

15 BY ATTORNEY BROOKS:

16 Q. Let me take you back to Exhibit 16. And the
17 first paragraph contains a narrative. I have no idea
18 whether it is a specific narrative or kind of case study
19 narrative about this girl Patricia who told her parents
20 she was transgender at age 13. It goes on to say that a
21 year earlier she had been sexually assaulted by an older
22 girl. Do you know what percentage of natal females who
23 come to your clinic after the beginning of puberty have
24 experienced sexual assault before they present to you?

1 ATTORNEY BORELLI: Objection, form.

2 THE WITNESS: I can't give you a
3 percentage. It is something that we discuss with every
4 patient in their intake assessment.

5 BY ATTORNEY BROOKS:

6 Q. Do you believe that natal females who have
7 suffered sexual assault are disproportionately
8 represented among the population who present
9 experiencing gender dysphoria or gender incongruence?

10 ATTORNEY BORELLI: Objection, form.

11 THE WITNESS: So those assigned female at
12 birth, I can't say that based on my review of my
13 information that they are overrepresented. And I would
14 have to have a comparison group. You know, one in four
15 cisgender women have been attacked sexually at some
16 point in their life. It's hard to get around that.

17 BY ATTORNEY BROOKS:

18 Q. Let me ask you to turn to page three of Exhibit
19 16.

20 A. I'm sorry ---.

21 Q. Page three, Exhibit 16.

22 A. Okay. Thank you. I just had a drink of water.

23 Q. Of course.

24 A. They're not labeled on my paper.

1 Q. The pages are not. You are right. I wrote them
2 on mine. You would have to count them to be sure, but
3 the third page.

4 A. I think I got it.

5 Q. These authors, Doctors Edwards Leeper and
6 Anderson, state at the end of the paragraph at the top
7 of page three that, quote, we may be harming some of the
8 young people we strive to support, people who may not be
9 prepared for the gender transitions they are being
10 rushed into, closed quote.

11 Do you see that?

12 A. Where again?

13 Q. It's the very last sentence of the partial
14 paragraph at the top?

15 A. Right. Got it. Thank you. Yeah, I see it.

16 Q. Do you share that concern expressed by Dr.
17 Edwards Leeper and Dr. Anderson that is that some young
18 people are being rushed into transitions and may be
19 harmed rather than supported as a result?

20 ATTORNEY BORELLI: Objection, form.

21 THE WITNESS: So if you're following the
22 recommendations there's at least six months of time. In
23 my general experience it is years before they even
24 present to my clinic. So I don't --- I would not say

1 that that's a rush.

2 BY ATTORNEY BROOKS:

3 Q. Well, and my question wasn't about your clinic
4 now. My question was do you share the concern of these
5 authors that looking around the practice more generally
6 that some young people are being harmed rather than
7 supported because they are being rushed into transitions
8 they may not be fully prepared for?

9 ATTORNEY BORELLI: Objection, form.

10 THE WITNESS: So within research and
11 within my conversations with my colleagues who are doing
12 similar work, we practice similarly. I don't agree that
13 they are rushing these kids.

14 BY ATTORNEY BROOKS:

15 Q. Let me ask you to turn over to the next page.
16 And there in the second paragraph from the bottom is a
17 sentence that begins in a recent study. Do you see that
18 sentence?

19 A. I must not be on the right page.

20 Q. It is the penultimate page.

21 A. In the ---.

22 Q. In the penultimate paragraph.

23 A. Providers, that one?

24 Q. In a recent study of 100 detransitioners. I

1 think it does, it begins ---.

2 A. Okay. All right.

3 Q. Within that you'll find the sentence that begins
4 in recent study.

5 A. Got it.

6 Q. And it says in a recent study 100
7 detransitioners, for instance, 38 percent reported that
8 they believed their original dysphoria have been caused
9 by something specific such as trauma, abuse or mental
10 health condition, closed quote.

11 Do you see that?

12 A. I do.

13 Q. Are you, yourself, aware of a recently published
14 survey of 100 detransitioners by Dr. Litman of Brown
15 University?

16 ATTORNEY BORELLI: Objection, form.

17 THE WITNESS: I have not seen that
18 report.

19 BY ATTORNEY BROOKS:

20 Q. Are you aware of that?

21 ATTORNEY BORELLI: Objection to form.

22 THE WITNESS: No, actually. Again, I
23 don't remember names, so when you ask me about an
24 article by Doctor Brown, I know 100 Doctor Brown. And I

1 have seen some articles about de-transition. So without
2 that in front of me to really say, yes, I've seen that
3 article --- it's possible. I do my best to keep up on
4 the literature.

5 BY ATTORNEY BROOKS:

6 Q. All right. I'm used to wetting my fingers ---
7 let me take you back to the previous page, the third
8 paragraph --- and the paragraph begins comprehensive
9 assessment. Do you see that paragraph?

10 A. Yes.

11 Q. And at the end of that the last sentence reads
12 the messages that teens get from Tik-Tok and other
13 sources may not be very productive for understanding
14 this constellation of issues, referring to gender
15 dysphoria-related issues. Do you see that sentence?

16 A. I do.

17 Q. Do you share the concern of these authors, young
18 people are being unduly influenced on issues of gender
19 identity by social media messages?

20 ATTORNEY BORELLI: Objection to form.

21 THE WITNESS: As a pediatrician, I have
22 my reservations about social media and their effects on
23 teens. Always reminding teens in my care that they need
24 to check their sources and that TikTok isn't, for

1 example, peer reviewed and that they should rely on, you
2 know, the knowledge of their provider. And they're free
3 to ask those questions and learn that information from a
4 reliable person within our clinic.

5 BY ATTORNEY BROOKS:

6 Q. Do you share the concern that teens are
7 particularly subject to peer pressure through social
8 media?

9 ATTORNEY BORELLI: Objection, form.

10 THE WITNESS: So you know, peer pressure
11 is a recognized phenomenon with adolescents that can
12 affect teens.

13 BY ATTORNEY BROOKS:

14 Q. Is your clinic seeing an increasing number of
15 older teens or young adults who are considering
16 de-transitioning?

17 ATTORNEY BORELLI: Objection, form.

18 THE WITNESS: I'm sorry. Repeat the very
19 first part of that.

20 BY ATTORNEY BROOKS:

21 Q. Is your clinic seeing an increasing number of
22 older teens or young adults who are considering
23 de-transitioning?

24 ATTORNEY BORELLI: Objection, form.

1 THE WITNESS: Increasing over time ---

2 BY ATTORNEY BROOKS:

3 Q. Yes.

4 A. --- or in the past? I wouldn't say the rate has
5 increased in my clinic.

6 Q. Within the last --- well, let's say within 2021
7 or whatever of 2022 there has been, how many patients
8 have raised with you or to your knowledge anyone in your
9 clinic the possibility of de-transitioning?

10 ATTORNEY BORELLI: Objection, form.

11 THE WITNESS: In that timeframe, I would
12 have to look back exactly. Only three.

13 BY ATTORNEY BROOKS:

14 Q. Are you aware of multiple reports that the
15 proportion of young people presenting with gender
16 dysphoria or gender incongruence among teens has shifted
17 heavily towards girls over the last decade?

18 ATTORNEY BORELLI: Objection, form.

19 THE WITNESS: You will have to clarify
20 the question because girls ---.

21 BY ATTORNEY BROOKS:

22 Q. Are you aware that the proportion of teens
23 presenting at clinics with gender dysphoria or gender
24 incongruence who are natal female has increased greatly

1 over the last decade?

2 ATTORNEY BORELLI: Objection, form.

3 THE WITNESS: I have seen at least one
4 study would suggest that. It has not been my clinical
5 experience.

6 BY ATTORNEY BROOKS:

7 Q. That has not been the experience in your clinic?

8 A. No.

9 Q. Let me take you to paragraph 18 of your expert
10 report. And there you express the opinion that a
11 person's gender identity cannot be voluntarily changed
12 and is not undermined or altered by the existence of
13 other sexually related characteristics that do not align
14 with it. Do you see that?

15 A. I do.

16 Q. And let me, in fact, have the Declaration ---
17 the preliminary injunction declaration, which is tab one.

18 ATTORNEY BROOKS: I'm going to mark that
19 as Exhibit --- or did I already mark it?

20 ATTORNEY WILKINSON: Not marked.

21 ATTORNEY BROOKS: I did not. So what
22 exhibit was that?

23 ATTORNEY WILKINSON: Eighteen (18).

24 ATTORNEY BROOKS: We will mark the

1 Declaration of Deanna Adkins dated 5/21/2021 as Exhibit
2 18.

3 ---

4 (Whereupon, Adkins Exhibit 18,
5 Declaration of Deanna Adkins, M.D., was
6 marked for identification.)

7 ---

8 BY ATTORNEY BROOKS:

9 Q. And in this document also I want to call your
10 attention to paragraph 18. And in the declaration filed
11 in May of last year in paragraph 18 you wrote a person's
12 gender identity is fixed. Do you see that language?

13 A. I do.

14 Q. And you eliminated the word --- the assertion
15 that a person's gender identity is fixed from your
16 expert declaration submitted more recently. Do you see
17 that?

18 A. I do.

19 Q. Why did you make that omission?

20 A. I think that it's too easy to misinterpret.

21 Q. Explain.

22 A. So when I'm talking about someone's gender
23 identity it is what it is. And nothing that I do or
24 they do or their family does can change that gender

1 identity. Their understanding of that gender identity
2 may change over time. And that was my --- what I was
3 trying to say was not changeable. And when you use the
4 other word it seems that it could be misinterpreted to
5 me.

6 Q. So you don't mean to say that gender identity
7 never changes in individuals, do you?

8 ATTORNEY BORELLI: Objection, form.

9 THE WITNESS: That's not what I said. I
10 said gender identity is what it is. And your
11 understanding of it may change over time.

12 BY ATTORNEY BROOKS:

13 Q. We looked in the Endocrine Society Guidelines,
14 at the language that refers to individuals who
15 experience a continuous and rapid involuntary
16 alternation between male and female. Do you remember
17 that language?

18 A. I do.

19 Q. How does that relate --- how is that consistent
20 with your opinion that gender identity is fixed and
21 means what it is?

22 ATTORNEY BORELLI: Objection, form.

23 THE WITNESS: So gender identity is that
24 it moves somewhat along the spectrum. That doesn't

1 change. That is their identity.

2 BY ATTORNEY BROOKS:

3 Q. That doesn't change, but you have a professional
4 opinion that individuals who experience a gender fluid
5 identity at some period in their life inevitably remain
6 gender fluid for the rest of their lives?

7 ATTORNEY BORELLI: Objection, form.

8 THE WITNESS: Understanding their gender
9 identity may change, what the identity is, is under
10 exploration throughout their lives. From the time
11 they're young they're discovering their gender identity.

12 BY ATTORNEY BROOKS:

13 Q. Well, you consider part of your professional
14 practice to believe what people tell you about their
15 gender identity, don't you?

16 ATTORNEY BORELLI: Objection, form.

17 THE WITNESS: The gender identity is
18 something that can only be explained by a person because
19 it is their knowledge of themselves.

20 BY ATTORNEY BROOKS:

21 Q. And if a person at one point in time feels that
22 their gender identity is fluid and another point in time
23 feels that it is not, on what basis do you say that
24 their true gender identity hasn't changed?

1 ATTORNEY BORELLI: Objection, form.

2 THE WITNESS: Everyone's gender identity
3 is how they explain it. They may understand it
4 differently over time. Just because I say I don't like
5 strawberries when I'm eight and I do like strawberries
6 now doesn't meant I never liked strawberries to begin
7 with. It means I finally had a good strawberry.

8 ATTORNEY BROOKS: Let me have tab 12.

9 | Let me mark as Exhibit 20.

10 ATTORNEY WILKINSON: Nineteen (19).

11 ATTORNEY BROOKS: Let me mark as Exhibit
12 19, an article from Herbert Health Publishing by Sadra
13 Katz-Wise, entitled Gender Fluidity: What it Means and
14 Why Support Matters.

15 | -----

16 (Whereupon, Adkins Exhibit 19, 2020
17 Herbert Health Publishing Article, was
18 marked for identification.)

19 | ---

20 BY ATTORNEY BROOKS:

21 Q. First I'll ask if you have any professional
22 contact with Doctor Sadra Katz-Wise?

23 A. I don't see the name spelled out. It doesn't
24 sound familiar.

1 Q. It's just under the graphic here ahead of the
2 text. You'll see the name.

3 A. Oh, in red. That's why I didn't see it.

4 Q. Yeah, exactly. Right.

5 A. Got it. Katz-Wise. No.

6 Q. I see, when I look her up, that Dr. Katz-Wise is
7 associated with Boston Children's Hospital and Harvard
8 Medical School. That doesn't refresh your recollection
9 as to any previous professional interactions with her?

10 A. Again, I'm terrible with names.

11 Q. You're aware that Boston Children's Hospital has
12 a high reputation in the area of transgender therapy?

13 ATTORNEY BORELLI: Objection, form.

14 THE WITNESS: Well, they have been
15 involved in transgender therapy for a long time.

16 BY ATTORNEY BROOKS:

17 Q. And they have a high reputation?

18 ATTORNEY BORELLI: Objection, form.

19 THE WITNESS: In general people feel like
20 they do a good job.

21 BY ATTORNEY BROOKS:

22 Q. Let me ask you to turn to the second page. And
23 down at the bottom is a heading that says what's the
24 difference between gender fluid and transgender. Do you

1 see that?

2 A. I do.

3 Q. And the first sentence there says while some
4 people develop a gender identity early in childhood,
5 others may identify with one gender at one time and then
6 another gender later on.

7 Do you see that?

8 A. I do.

9 Q. And do you agree or disagree with that statement
10 by Dr. Sabar Katz-Wise?

11 ATTORNEY BORELLI: Objection, form.

12 THE WITNESS: So she is not saying that
13 their gender identity changes. You know, at different
14 times in your life your understanding may be that this
15 is the group that I belong with. And as you learn more
16 about your experience and your gender, that can change.

17 BY ATTORNEY BROOKS:

18 Q. Dr. Adkins, how do you as a clinician --- if you
19 have a patient who at one time identifies one way and
20 another time identifies another way, how do you as a
21 clinician determine which of those is that patient's
22 true gender identity, given that you've said that gender
23 identity is something that only the patient can express
24 to you?

1 ATTORNEY BORELLI: Objection, form.

2 THE WITNESS: So you know, we're not sort
3 of doing anything to influence that in our patients
4 until they come to us later and have had lots of time to
5 reflect on that. They by the guidelines need to have at
6 least six months of identification with and
7 understanding that gender identity is a particular way.
8 And typically gender identity is starting to consolidate
9 in adolescence and have a good understanding of your
10 identity at that time.

11 BY ATTORNEY BROOKS:

12 Q. What do you understand to be meant by the term
13 gender incongruence?

14 A. It is similar to the gender identity not
15 matching your sex assigned at birth.

16 Q. Let me ask you to find Exhibit 4, 2007 Endocrine
17 Society guidelines. And turn if you would to page 3879,
18 first column under the heading evidence, it reads in
19 most children diagnosed with GD/gender incongruence it
20 did not persist into adolescence.

21 Do you see that?

22 A. I did.

23 Q. So the point here is that these children were,
24 in fact, diagnosed with gender dysphoria or gender

1 incongruence which you just said means that their gender
2 identity doesn't match their gender assigned at birth.
3 And then the Endocrine Society goes on to say that that
4 identity, that sense of incongruence does not persist
5 into adolescence.

6 Do you see that?

7 ATTORNEY BORELLI: Objection, form.

8 THE WITNESS: I do.

9 BY ATTORNEY BROOKS:

10 Q. And how do you reconcile that with your
11 previously expressed opinion that gender identity is,
12 quote, fixed?

13 ATTORNEY BORELLI: Objection, form.

14 THE WITNESS: So this is a random piece
15 out of this whole publication. They are talking --- as
16 far as I can tell right here, and again I would be
17 speculating, that it is about a particular piece of
18 medical evidence. And medical evidence in this area has
19 varied. It's based on the different groups and the way
20 they were recruited, et cetera.

21 BY ATTORNEY BROOKS:

22 Q. Well, you're --- never mind on a particular
23 piece. You're well aware, are you not, that there are
24 multiple studies that indicate the substantial majority

1 of children who are diagnosed with gender dysphoria
2 desist from experiencing gender dysphoria by some stage
3 in adolescence?

4 ATTORNEY BORELLI: Objection, form.

5 BY ATTORNEY BROOKS:

6 Q. You discuss that in your report, do you not?

7 A. I'm sorry. Can you repeat the question?

8 Q. You are aware that there are multiple studies
9 that have found that children diagnosed with gender
10 dysphoria, the large majority of those individuals
11 desist from experiencing gender dysphoria by some time
12 in adolescence?

13 ATTORNEY BORELLI: Objection, form.

14 THE WITNESS: And I don't typically see
15 those patients in my clinic.

16 BY ATTORNEY BROOKS:

17 Q. But you're aware of the science that is
18 described though.

19 Right?

20 ATTORNEY BORELLI: Objection, form.

21 THE WITNESS: There are patients ---
22 there are studies that were done in the past that were
23 not well done and had a bias with the recruitment that
24 overlapped with other issues. I'm aware of those

1 studies. And children are not being treated in my
2 clinic for gender dysphoria. Adolescents are who we
3 treat in our clinic.

4 BY ATTORNEY BROOKS:

5 Q. Well, the study that the Endocrine Society chose
6 to cite for this proposition just a little lower in that
7 paragraph it says as follows. And this is 2017
8 Endocrine Society Guidelines. They say a large
9 majority, about 85 percent of prepubertal children with
10 a childhood diagnosis did not remain gender
11 dysphoric/gender incongruent into adolescence.

12 Do you see that language?

13 A. I see that language.

14 Q. And this Endocrine Society considered that
15 science worth citing rather than dismissing it as poorly
16 done, as you just attempted.

17 Correct?

18 ATTORNEY BORELLI: Objection, form.

19 THE WITNESS: In your goals in creating
20 guidelines you want to be presenting the information
21 that's available. This study is available.

22 BY ATTORNEY BROOKS:

23 Q. And the study in question is one by some of the
24 most highly respected researchers in the field.

1 Am I correct?

2 ATTORNEY BORELLI: Objection.

3 BY ATTORNEY BROOKS:

4 Q. I see you looking at the footnote?

5 A. Right.

6 Q. Those are among the most highly respected
7 researchers in the field.

8 Correct?

9 A. They are some of the --- they're some of the
10 original researchers.

11 Q. And to this very day they are among the most
12 highly respected in the field.

13 Am I right?

14 ATTORNEY BORELLI: Objection, form.

15 THE WITNESS: In general, they are doing
16 good research and publications. I can't say everything
17 they do is beautiful.

18 BY ATTORNEY BROOKS:

19 Q. Dr. Adkins, do you refuse to acknowledge that
20 Dr. Steemsma, DeVries and Cohen-Kettenis are among the
21 most highly respected researchers in your field?

22 ATTORNEY BORELLI: Objection, form.

23 THE WITNESS: Of their work that I have
24 read and seen in general it is based on standards of

1 medical literature done well, though I have not read
2 every study. I'm not going to comment on everything
3 that they have done. A lot of the things I'm aware of
4 are done well.

5 BY ATTORNEY BROOKS:

6 Q. I didn't ask you to comment on a single one of
7 their articles. I asked you isn't their reputation
8 among the highest in your field?

9 ATTORNEY BORELLI: Objection, form.

10 THE WITNESS: If --- for gender-affirming
11 care, yes.

12 BY ATTORNEY BROOKS:

13 Q. Thank you. How does their finding in large
14 majority of children diagnosed with gender dysphoria
15 desist from experiencing gender dysphoria by some stage
16 in adolescence square with your opinion that gender
17 identity is, quote, fixed?

18 ATTORNEY BORELLI: Objection, form.

19 THE WITNESS: I'm sorry. Where are you
20 reading from and what was that again?

21 BY ATTORNEY BROOKS:

22 Q. How does their finding that large majority of
23 children diagnosed with gender dysphoria before puberty
24 desist from experiencing gender dysphoria by some stage

1 in adolescence fit with your expressed opinion that
2 gender identity is fixed?

3 ATTORNEY BORELLI: Objection, form.

4 THE WITNESS: So they are talking about
5 prepubertal children. Prepubertal children haven't gone
6 through their real under --- development of
7 understanding of their gender identity or their
8 consolidation of gender identity at that time. It's
9 kind of a false endpoint to put it that way because
10 we're not really again treating these young children and
11 we're not changing anything about them. These patients
12 wouldn't even come to my clinic.

13 BY ATTORNEY BROOKS:

14 Q. You don't see prepubertal children at your
15 clinic?

16 ATTORNEY BORELLI: Objection, form.

17 THE WITNESS: Very rarely.

18 BY ATTORNEY BROOKS:

19 Q. And?

20 A. Gender clinic?

21 Q. Patients you treat in any capacity?

22 ATTORNEY BORELLI: Objection to form.

23 THE WITNESS: I see all kinds of patients
24 from birth until --- I'm credentialed to 30.

1 BY ATTORNEY BROOKS:

2 Q. Do you in your professional work deal with
3 prepubertal children who are experiencing gender
4 dysphoria?

5 ATTORNEY BORELLI: Objection, form.

6 THE WITNESS: Some.

7 BY ATTORNEY BROOKS:

8 Q. Okay.

9 And do you want to revise the statement in your
10 report to say instead that after puberty gender identity
11 is fixed?

12 ATTORNEY BORELLI: Objection, form.

13 THE WITNESS: Will you point that out to
14 me?

15 BY ATTORNEY BROOKS:

16 Q. I'm sorry, point what out to you?

17 A. That particular statement in my report.

18 Q. I misspoke. You asserted in your declaration
19 that gender identity was fixed and my question is on
20 consideration would you prefer to say that gender
21 identity is fixed after puberty has occurred?

22 ATTORNEY BORELLI: Objection, form.

23 THE WITNESS: So I didn't put that in a
24 way that --- again, we eliminated the word fixed because

1 of the easy ability to misconstrue that. People undergo
2 a period of time in life where they understand their
3 gender better than other times. And puberty is part of
4 --- part of the mix.

5 BY ATTORNEY BROOKS:

6 Q. So --- and this is the opportunity --- you're
7 here, so we're not going to misunderstand your words.
8 You signed and swore to an affidavit last year in which
9 you said gender identity is fixed. I'm giving you an
10 opportunity if you want to clarify or qualify that. And
11 my question to you is, is it now your testimony that
12 gender identity is fixed once puberty has occurred?

13 ATTORNEY BORELLI: Objection, form.

14 THE WITNESS: Again, I think we have
15 another document here that doesn't use the word fixed.
16 Would you like me to go back and read that part? I can
17 read through it and find it for you.

18 BY ATTORNEY BROOKS:

19 Q. No. I would like to work with your sworn
20 document from May of last year in which you said it was
21 fixed.

22 A. When we update documents we try to clarify
23 anything that might be confusing.

24 Q. Dr. Adkins, in May of 2021, which is not so long

1 ago, you swore under oath that it was your professional
2 opinion that gender identity was fixed. I'm entitled to
3 ask you about that. The fact that you wanted to change
4 a later document is interesting. It doesn't deprive me
5 of the right to ask you questions about that document.

6 My question for you now is do you want to revise
7 that statement to express the opinion that gender
8 identity is fixed after puberty?

9 ATTORNEY BORELLI: Objection, form. I
10 apologize, Counsel. Can we --- I'm sorry, just lost
11 track. Have you introduced the PI declaration?

12 ATTORNEY BROOKS: I have.

13 ATTORNEY BORELLI: What exhibit number is
14 it?

15 ATTORNEY BROOKS: It is 18. Paragraph
16 18.

17 ATTORNEY BORELLI: Paragraph 18. Thank
18 you. Objection to form.

19 THE WITNESS: So I don't think that my
20 description of people's understanding of gender identity
21 and the way that we understand its development has
22 changed. I can't do anything to change their identity.
23 You can't do it. Their parents can't do it. And in
24 that way I still agree with the fact that in the way

1 that that was meant to be stated, that it can't be
2 changed. Fixed is a similar word. I use that word.

3 BY ATTORNEY BROOKS:

4 Q. So and I didn't ask you about our ability to
5 change somebody else. Let me ask you a different
6 question. At which developmental stage in your
7 professional opinion does gender identity become fixed?

8 ATTORNEY BORELLI: Objection, form.

9 THE WITNESS: Again, I believe I said
10 already that gender identity is what it is from the time
11 you are young. Your understanding of that develops over
12 time based on your path through life. That --- in that
13 way you can't change it.

14 BY ATTORNEY BROOKS:

15 Q. Does that mean that if, according to Steemza and
16 Cohen-Kettenis, 85 percent of prepubertal children who
17 are diagnosed with gender dysphoria ultimately desist
18 from experiencing dysphoria, that their original
19 diagnoses were wrong?

20 ATTORNEY BORELLI: Objection to form.

21 THE WITNESS: So there are a lot of
22 individuals who have looked at that information and felt
23 that the original group of individuals didn't have a
24 transgender identity. In a young group that's hard to

1 assess at times. And so I would say in that way, you
2 know, we --- it's just not the same. And you can repeat
3 the question for me, please.

4 ATTORNEY BORELLI: We have been going an
5 hour. I'd like to take a break.

6 ATTORNEY BROOKS: Let me repeat the
7 question since I was just invited to do so.

8 BY ATTORNEY BROOKS:

9 Q. I believe you testified that it is your view
10 that one's gender identity never changes from infancy to
11 adulthood although one's understanding of it may change
12 over time. My question for you now is does that mean
13 that in every case in which a child is diagnosed as
14 gender dysphoric and they subsequently desist from
15 gender dysphoria that the original diagnosis was wrong?

16 ATTORNEY BORELLI: Objection, form.

17 THE WITNESS: So you know, at the time
18 that their understanding of their identity was different
19 from their sex assigned at birth when they were a child,
20 if that was the case, and it is not clear in that study
21 that that was necessarily the case, that the individuals
22 felt dysphoria about that, that is what happened to
23 them. Their understanding of their identity, if it
24 changed over time, it may relieve some of that gender

1 dysphoria. I guess that's the best way I can state it.

2 ATTORNEY BROOKS: Let's take that break.

3 THE WITNESS: Thank you.

4 VIDEOGRAPHER: Going off the record. The
5 current time reads 3:43 p.m. Eastern Standard Time.

6 OFF VIDEO

7 ---

8 (WHEREUPON, A PAUSE IN THE RECORD WAS HELD.)

9 ---

10 ON VIDEO

11 VIDEOGRAPHER:

12 We're back on the record. The current
13 time is 3:59 p.m. Eastern Standard Time.

14 ATTORNEY BROOKS: I'm just --- sorry.
15 I'm just moving that so --- make sure it's still
16 recording and I didn't muck it up. I just wanted to not
17 hit it with papers.

18 ATTORNEY WILKINSON: Yes, it's still
19 recording.

20 BY ATTORNEY BROOKS:

21 Q. Let's --- Dr. Adkins, if I can ask you to find
22 Exhibit 4 again, which is the 2017 guidelines. We are
23 again on page 3879 where we just were. And there after
24 the discussion that we looked at about desistance of

1 childhood gender dysphoria, the next sentence reads
2 right after where we stopped if children had completed
3 socially transition, the may have great difficulty in
4 returning to the original gender role upon entering
5 puberty. And it continues social transition is
6 associated with the persistence of GD/gender
7 incongruence as a child progresses into adolescence.

8 Do you see that?

9 A. Uh-huh (yes).

10 Q. At the very end of the paragraph it reads social
11 transition in addition to GD/gender incongruence has
12 been found to contribute to the likelihood of
13 persistence.

14 Do you see that?

15 A. Uh-huh (yes).

16 Q. Now, what the Endocrine Society Committee,
17 considering all the available research, says is that
18 social transition has been found to contribute to the
19 likelihood of persistence. Is that how you read their
20 language here?

21 ATTORNEY BORELLI: Objection, form.

22 THE WITNESS: That's how I read it.

23 BY ATTORNEY BROOKS:

24 Q. And social transition has to do with how the

1 people around the child treat him or her, what pronouns
2 they use, what names they use, what clothing they
3 provide, correct, is that consistent with your
4 understanding of social transition?

5 ATTORNEY BORELLI: Objection, form.

6 BY ATTORNEY BROOKS:

7 Q. It has to do with how society, how the people
8 around you treat you.

9 Correct?

10 ATTORNEY BORELLI: Objection, form.

11 THE WITNESS: Yes.

12 BY ATTORNEY BROOKS:

13 Q. And therefore, what this is saying is how
14 parents and those around the child treat that child can
15 affect whether that child ends up identifying as
16 transgender or identifying with a gender identity
17 congruent with his or her biology.

18 Correct?

19 ATTORNEY BORELLI: Objection, form.

20 THE WITNESS: One more time.

21 BY ATTORNEY BROOKS:

22 Q. What this is saying is that how parents --- when
23 it says that social transition has been found to
24 contribute to the likelihood of persistence what that

1 tells us is how parents and others around the child
2 treat that child can affect whether the child ends up
3 identifying as transgender or cisgender?

4 ATTORNEY BORELLI: Objection, form.

5 THE WITNESS: That is the way that reads.
6 I would say that, you know, I don't recommend
7 necessarily --- I recommend we follow the child and
8 watch their gender developments.

9 BY ATTORNEY BROOKS:

10 Q. This Committee says that by assisting a child to
11 socially transition the available science suggests that
12 adults are contributing to the likelihood of persistence
13 rather than desistance. That's what it says.

14 Right?

15 ATTORNEY BORELLI: Objection, form.

16 THE WITNESS: I'm sorry. I'm going to
17 make you say it one more time, please. I apologize.
18 I'm just getting tired.

19 BY ATTORNEY BROOKS:

20 Q. I know the feeling. This says that by assisting
21 a child to socially transition the available science
22 suggests that adults are, quote, contributing to the
23 likelihood of persistence rather than desistance.

24 ATTORNEY BORELLI: Objection, form.

1 THE WITNESS: Gosh. So I'm not sure what
2 you say sounds right to me. That is what it says on the
3 paper.

4 BY ATTORNEY BROOKS:

5 Q. And I will give you a chance to tell us whether
6 you agree or disagree with it, because my understanding
7 is that you, in contrast, believe that external
8 influences can't affect gender identity.

9 Correct?

10 ATTORNEY BORELLI: Objection to form.

11 BY ATTORNEY BROOKS:

12 Q. Cannot?

13 A. So you know, all of your life influences your
14 identity development. You can't change what it is. You
15 can --- it can change your experience. I don't think
16 that these children were likely to have had a different
17 outcome.

18 Q. So your view is that gender identity can't
19 change and therefore any child whose gender identity
20 appears to change must have been mistaken at some state
21 of their understanding.

22 Correct?

23 ATTORNEY BORELLI: Objection, form.

24 THE WITNESS: So their understanding of

1 their gender identity can develop over time.

2 BY ATTORNEY BROOKS:

3 Q. Do you agree or disagree with this statement in
4 the Endocrine Society Guidelines that social transition
5 has been found to contribute to the likelihood of
6 persistence?

7 ATTORNEY BORELLI: Objection, form.

8 THE WITNESS: You know, they --- I
9 answered that question.

10 BY ATTORNEY BROOKS:

11 Q. I'm sorry. I perhaps didn't correctly
12 understand. So if you would answer it again, that would
13 be helpful.

14 A. So kids who --- now I've forgotten the question.

15 Q. This one is a simple one. Do you agree or
16 disagree with the statement from this committee, the
17 Endocrine Society, that social transition has been found
18 to contribute to the likelihood of persistence?

19 ATTORNEY BORELLI: Objection, form.

20 THE WITNESS: You know, this --- it's
21 hard for me to agree with that. As a pediatrician I
22 know that people --- prepubertal children, young
23 children, explore their gender identity in a lot of
24 different ways over time, and so I don't know that I can

1 agree necessarily that the way that it's written ---
2 that I necessarily agree with the specific terms.

3 BY ATTORNEY BROOKS:

4 Q. I don't mean to suggest to you by word or tone
5 that this document was handed down on Mount Sinai. I
6 understand that there's room for scientists to disagree.
7 I am just trying to get clear on your opinion. I'm
8 pretty sure this document was not handed down on Mount
9 Sinai.

10 Let me find a copy of your rebuttal report, which
11 I believe was marked as Exhibit 3. Exhibit 3, the
12 rebuttal report. Let me ask you to turn to page 11 of
13 your rebuttal report. We can hand you another copy if
14 need be. We should have one more.

15 A. I think this is it.

16 Q. No, we're looking for your rebuttal report.
17 It's going to be a typewritten kind of something or
18 other.

19 A. Like this, right?

20 Q. Exhibit 3.

21 A. I'm sorry. No that's not --- sugar.

22 Q. I'm just going to hand you another one.

23 A. Okay. Thank you.

24 Q. No hard feelings.

1 A. I --- I know it's here because I -- there's so
2 many papers. You warned me there would be so many
3 papers.

4 Q. I did. I tried to warn you.

5 Let me ask you to turn to paragraph 11 of your
6 rebuttal report.

7 A. Oh, okay. Yeah.

8 Q. Page five.

9 A. I'm sorry, the number --- one of the numbers
10 skipped and it was just a labeling of a reference, so
11 again 11.

12 Q. Yes. The second sentence there you wrote ---
13 and this is of course a recent submission, adolescents
14 with persistent gender dysphoria after reaching Tanner
15 stage two almost always persist in their gender identity
16 in the long term. Do you see that language?

17 A. I do.

18 Q. So --- and the basis that you cite for that
19 rather specific factual proposition is an article or
20 actually a chapter by Turban, DeVries and Zucker.

21 Correct? I'm just looking at footnote three.

22 A. Yes.

23 Q. So Tanner stage two, as I understand --- or we
24 can look at the Endocrine Society note, but this is ---

1 Tanner stage two is when children first begin to exhibit
2 physically recognizable changes in puberty.

3 Right?

4 ATTORNEY BORELLI: Objection, form.

5 THE WITNESS: Yes.

6 BY ATTORNEY BROOKS:

7 Q. So Tanner stage one, there's nothing observable.
8 And the beginning of Tanner stage two is the first
9 observable changes?

10 A. Yes.

11 ATTORNEY BORELLI: Objection, form.

12 BY ATTORNEY BROOKS:

13 Q. And I think you testified, but if you could just
14 remind us kind of the timespan that that tends to begin
15 for boys and girls.

16 ATTORNEY BORELLI: Objection, form.

17 THE WITNESS: Tanner two. Tanner two,
18 for those assigned female at birth can range in the
19 normal, typical development between the ages of 8 and
20 12. It does fall outside of that at times and is
21 considered early and could be a marker of a problem as
22 well as delayed could be a marker of a problem.

23 Q. For boys?

24 A. For those assigned male at birth, so usually

1 between 9 and 14. Anything earlier or later again might
2 trigger some questions that something is going on.

3 Q. So age eight is generally girls turn eight in
4 second or third grade? Third grade roughly?

5 ATTORNEY BORELLI: Objection, form.

6 THE WITNESS: That would be --- you know,
7 it varies because early starters, late starters. But
8 ---.

9 BY ATTORNEY BROOKS:

10 Q. And so for nine, for boys would be fourth grade?

11 ATTORNEY BORELLI: Objection to form.

12 THE WITNESS: That would be the typical.

13 BY ATTORNEY BROOKS:

14 Q. So we're talking grade school kids here, not
15 even the end of grade school?

16 ATTORNEY BORELLI: Objection, form.

17 BY ATTORNEY BROOKS:

18 Q. And if the type of changes that mark the
19 beginning of Tanner stage two are generally at least to
20 the layman's eye not visible on a clothed child.

21 Correct?

22 ATTORNEY BORELLI: Objection, form.

23 BY ATTORNEY BROOKS:

24 Q. That mark the beginning Tanner stage two?

1 ATTORNEY BORELLI: Objection, form.

2 THE WITNESS: I would say that some
3 assigned females at birth, especially if they're lean,
4 you can see their breast development.

5 BY ATTORNEY BROOKS:

6 Q. Just a breast bud. But in general, when we
7 speak of adolescence, we don't --- in common parlance we
8 do not include third and fourth graders, do we?

9 ATTORNEY BORELLI: Objection, form.

10 THE WITNESS: Well, the definition of
11 adolescence is the time during puberty, so they should
12 be included.

13 BY ATTORNEY BROOKS:

14 Q. In your experience as to how people use the
15 term, third and fourth graders included in adolescence?

16 ATTORNEY BORELLI: Objection, form.

17 THE WITNESS: It varies with regard to
18 the context. Within my medical practice that's the way
19 we use the term.

20 BY ATTORNEY BROOKS:

21 Q. At any rate, we're talking about grade school
22 ages, not junior high or middle school ages. What is
23 your basis for saying that those children who persist up
24 to the beginning of Tanner stage two almost always

1 persist transgender identity?

2 ATTORNEY BORELLI: Objection. Objection,
3 form.

4 THE WITNESS: I don't know which
5 reference it is, but I can state that in my practice
6 that's what I have seen.

7 BY ATTORNEY BROOKS:

8 Q. Let me show you the only reference you did cite
9 for that, which I will mark as Exhibit 20, the article
10 by Turban, DeVries and Zucker cited in footnote 20 of
11 your rebuttal report. I'm sorry. Don't know why I said
12 20. I'm going to hand the witness that article now.

13 A. Thank you.

14 ---

15 (Whereupon, Adkins Exhibit 20, Turban,
16 DeVries and Zucker Article, was marked
17 for identification.)

18 ---

19 COURT REPORTER: Excuse me, but you're
20 mumbling and I can't understand everything that you're
21 saying.

22 ATTORNEY BROOKS: At the moment I'm just
23 shuffling papers and handing out documents. And I will
24 speak up now and ask a question. Sorry about that.

1 COURT REPORTER: Well, we are on the
2 record and I need to be able to hear every single word
3 that you guys are saying.

4 ATTORNEY BROOKS: We'll do the best we
5 can.

6 COURT REPORTER: It's hard for me over
7 here.

8 BY ATTORNEY BROOKS:

9 Q. Is this, in fact, the article that you
10 referenced in your rebuttal report, Dr. Adkins, or the
11 chapter I should say?

12 A. Yeah. I mean, I'd have to take a minute to
13 review it.

14 VIDEOGRAPHER: Counsel, which tab number
15 is this?

16 THE WITNESS: I'm sorry, you broke up.

17 VIDEOGRAPHER: Which tab number is this
18 document?

19 ATTORNEY BROOKS: Tab 39. I apologize.

20 VIDEOGRAPHER: Thank you.

21 THE WITNESS: It is labeled as that.

22 BY ATTORNEY BROOKS:

23 Q. Well, do you recall recently reading this
24 article since it was cited in this document submitted

1 just last week?

2 A. I have reviewed this document. I don't remember
3 when though.

4 Q. Okay.

5 And in here --- let's look at page 638. And
6 there at the top of --- near the top of the first column
7 on 638 is a discussion of follow-up studies of
8 persisters and desisters. Do you see that discussion?

9 A. Yes.

10 Q. And it says --- four lines, five lines down it
11 begins, quote, Restoray and Skeemsma have provided the
12 most recent study of 10 follow up studies in which the
13 percentage of participants classified as persisters
14 ranged from two percent to 39 percent collapsed across
15 natal boys and girls, closed quote. Do you see that?

16 A. Yeah.

17 Q. And further down under the heading persistence
18 of gender dysphoria from adolescence to adulthood is a
19 very short paragraph that reads in its entirety in
20 contrast low rates of persistence from childhood into
21 adolescence, it appears that the vast majority of
22 transgender adolescents persist in their transgender
23 identity, closed quote.

24 Do you see is that?

1 A. Yes.

2 Q. And was that the language that you had in mind
3 when you cited this reference in footnote three of your
4 rebuttal report?

5 A. I would have to look all the way through the
6 article. It's consistent.

7 Q. And the language that I directed you to at the
8 top summarizes studies that show --- showing of
9 persistence of gender dysphoria among childhood
10 dysphorics of only two percent to 39 percent.

11 Right?

12 ATTORNEY BORELLI: Objection, form.

13 THE WITNESS: Those are two different
14 populations.

15 BY ATTORNEY BROOKS:

16 Q. They are. And I'm asking you now again about
17 what it says at the top?

18 A. Please repeat your question.

19 Q. The discussion at the top summarizes studies
20 showing persistent childhood dysphoria of only between
21 two percent and 39 percent, depending on the study?

22 ATTORNEY BORELLI: Objection to form.

23 THE WITNESS: I see that.

24 BY ATTORNEY BROOKS:

1 Q. And that is that the large majority consisted at
2 some stage before adulthood.

3 Correct?

4 ATTORNEY BORELLI: Objection, form.

5 THE WITNESS: More than half per this.

6 BY ATTORNEY BROOKS:

7 Q. And nothing here tells us about exactly what
8 stage of adolescence before adulthood they desisted,
9 does it?

10 ATTORNEY BORELLI: Objection, form.

11 THE WITNESS: In this literature
12 adolescence is puberty. It would have to be at least
13 Tanner two.

14 BY ATTORNEY BROOKS:

15 Q. At least. Now, my question was nothing in the
16 discussion up towards the top of the column about these
17 persistence and desistance studies tells us at what
18 stage of puberty the desisters desisted, does it?

19 ATTORNEY BORELLI: Objection, form.

20 THE WITNESS: I would have to look at the
21 whole study. Just in that line that detail is not
22 listed.

23 BY ATTORNEY BROOKS:

24 Q. And similarly, looking at the discussion under

1 the heading persistence of gender dysphoria from
2 adolescence to adulthood not being in that sentence
3 tells us what stage of adolescence, whether it is Tanner
4 stage two or three or four is being referred to when it
5 says the majority of adolescents persist?

6 ATTORNEY BORELLI: Objection, form.

7 THE WITNESSS: It's not written right
8 there, no.

9 BY ATTORNEY BROOKS:

10 Q. Please identify for me all studies you are aware
11 of that show that those who desist from childhood gender
12 dysphoria do so by no later than beginning of Tanner
13 stage two.

14 ATTORNEY BORELLI: Objection, form.

15 THE WITNESS: I am not going to be able
16 to remember those off the top of my head.

17 BY ATTORNEY BROOKS:

18 Q. Can you remember a single one?

19 ATTORNEY BORELLI: Objection, form.

20 THE WITNESS: I would have to have you
21 repeat the question, but I doubt it.

22 BY ATTORNEY BROOKS:

23 Q. I will repeat it. Identify all studies you're
24 aware of that show that those who desist from childhood

1 gender dysphoria do so no later than the time they first
2 reach Tanner stage two?

3 ATTORNEY BORELLI: Objection, form.

4 THE WITNESS: I don't think that I recall
5 a study that's been modeled that way.

6 BY ATTORNEY BROOKS:

7 Q. Can you tell me --- identify for me any study
8 that has examined whether what is called in the
9 literature watchful waiting combined with psychotherapy
10 results in worse outcomes for children as compared to
11 administration of puberty blockers and social outcomes?

12 ATTORNEY BORELLI: Objection, form.

13 THE WITNESS: So the experience is that
14 some patients have dysphoria that is significant enough
15 once they are in puberty to be dangerous to their life.
16 I worry about those patients. We allow them a pause
17 with puberty blockers to continue to figure out their
18 gender identity. I got lost in my answer, I apologize.

19 BY ATTORNEY BROOKS:

20 Q. Well, Dr. Adkins, I didn't ask what you were
21 worried about. I asked can you identify any study that
22 examines whether watchful waiting for children combined
23 with psychotherapy results in better or worse outcomes
24 on average than administering puberty blockers and

1 social transition?

2 ATTORNEY BORELLI: Objection, form.

3 THE WITNESS: You know, I can't remember
4 the exact study. We have studies that show that if you
5 are not helping the patients relieve their gender
6 dysphoria and psychotherapy has not been shown to do
7 that, then we would be, you know, at an unethical point
8 to do that study because it would increase risk of death
9 in those patients for us to watch and wait.

10 BY ATTORNEY BROOKS:

11 Q. So your answer is at no time since the inception
12 of this field, that is therapy for gender dysphoria, are
13 you aware of any study comparing outcomes for gender
14 dysphoric children of on the one hand watchful waiting
15 accompanied by psychotherapy and on the other hand
16 puberty blockers and social transitioning?

17 ATTORNEY BORELLI: Objection, form.

18 THE WITNESS: There's a long history of
19 individuals who were left untreated or treated with
20 psychotherapy who died in hospitals or not in hospitals
21 because they were only given those therapies which were
22 the only ones available at the time.

23 BY ATTORNEY BROOKS:

24 Q. Dr. Adkins, you are also aware, are you not,

1 that there's a long history of individuals who have
2 transitioned both socially and hormonally who have
3 committed suicide?

4 ATTORNEY BORELLI: Objection to form.

5 BY ATTORNEY BROOKS:

6 Q. That's well documented in the literature, is it
7 not?

8 ATTORNEY BORELLI: Objection, form.

9 THE WITNESS: There are individuals who
10 still struggle with depression and anxiety to the point
11 that they are --- do commit suicide and they have not
12 necessarily the reason being related to their gender
13 dysphoria. Could be. Hard to know.

14 BY ATTORNEY BROOKS:

15 Q. In fact, Skeemsma and colleagues at the
16 respected institute in Amsterdam, DeVry University, have
17 documented very high rates of successful completed
18 suicide among transgender adults, have they not?

19 ATTORNEY BORELLI: Objection, form.

20 THE WITNESS: I would have to see the
21 study.

22 BY ATTORNEY BROOKS:

23 Q. You are not aware of that information?

24 A. I have not seen that study. I have read the

1 literature. I don't recall a study saying there was a
2 high or why. I would need a number.

3 BY ATTORNEY BROOKS:

4 Q. You read Dr. Levine's report?

5 A. Yeah, it was --- yes.

6 Q. And do you recall that he cites multiple
7 studies, including studies from DeVry University team
8 documenting high rates of successful completed suicide,
9 not studies, he's done, that clinic has done documented
10 high rates of successful suicide among transgender
11 adults?

12 ATTORNEY BORELLI: Objection, form.

13 THE WITNESS: I would need a number. I'm
14 not going to classify something as high just because ---
15 I would need a number.

16 BY ATTORNEY BROOKS:

17 Q. Have you thought that it was incumbent upon you
18 somebody assisting young people to transition and
19 prescribing hormones to thoroughly investigation and
20 question suicidality among transitioned transgender
21 individuals?

22 ATTORNEY BORELLI: Objection, form.

23 THE WITNESS: Again, yes. I read those
24 when I can. I am not good with recalling names in

1 specific reports. I am aware that that is an issue with
2 some people who have transitioned fully.

3 BY ATTORNEY BROOKS:

4 Q. Do you believe that social transition is an
5 important part of medical care for transgender
6 individuals?

7 ATTORNEY BORELLI: Objection, form.

8 THE WITNESS: Yes.

9 BY ATTORNEY BROOKS:

10 Q. And do you also consider puberty blockers to be
11 part of treatment for children with gender dysphoria?

12 ATTORNEY BORELLI: Objection to the form.

13 THE WITNESS: I have seen results from a
14 recent study that said that there was a decrease in
15 dysphoria. I think it was anxiety and depression. I
16 would have to double check the article, with puberty
17 blockers. Our goal with puberty blockers is to pause
18 and allow people to understand their identity and figure
19 out what is going on with that understanding and what is
20 the best care for that patient is.

21 BY ATTORNEY BROOKS:

22 Q. Is the point of administering puberty blockers
23 to children who are experiencing gender dysphoria to
24 prevent puberty from occurring at the time that it

1 naturally would occur in that child?

2 ATTORNEY BORELLI: Objection, form.

3 THE WITNESS: In patients --- in patients
4 who are having early puberty it is a different
5 mechanism. For people with gender dysphoria where you
6 are trying to pause it and we keep it within the realm
7 of normal pubertal development.

8 BY ATTORNEY BROOKS:

9 Q. For individuals suffering --- children suffering
10 from gender dysphoria the precise point of administering
11 puberty blockers is to prevent puberty from occurring in
12 that child at the time it would otherwise naturally
13 occur.

14 Correct?

15 ATTORNEY BORELLI: Objection, form.

16 THE WITNESS: It would --- our pausing
17 the puberty and keeping it within the normal range of
18 pubertal development.

19 BY ATTORNEY BROOKS:

20 Q. Dr. Adkins, the purpose of administering
21 pubertal blockers to a particular child is to prevent it
22 from happening when it would otherwise happen naturally
23 in that child.

24 Correct?

1 ATTORNEY BORELLI: Objection, form.

2 BY ATTORNEY BROOKS:

3 Q. There is no other purpose?

4 ATTORNEY BORELLI: Objection, form.

5 THE WITNESS: I'm sorry. I have to ask
6 --- you used some pronounced in there that were not real
7 clear. If you don't mind repeating the question.

8 BY ATTORNEY BROOKS:

9 Q. The purpose of administering puberty blockers to
10 a child suffering from gender dysphoria is to prevent
11 puberty from happening in that child at the time it
12 would otherwise naturally occur in that child absent the
13 blockade?

14 ATTORNEY BORELLI: Objection.

15 THE WITNESS: We are pausing their
16 puberty once it starts, putting a pause.

17 BY ATTORNEY BROOKS:

18 Q. I get to ask the questions. That means you
19 wanted to prevent puberty from happening when it would
20 naturally happen for that child apart from the
21 medication?

22 ATTORNEY BORELLI: Objection, form.

23 THE WITNESS: Yes.

24 BY ATTORNEY BROOKS:

1 Q. Thank you.

2 You regularly tell parents that the
3 administration of puberty blockers for that purpose is,
4 quote, safe?

5 Correct?

6 ATTORNEY BORELLI: Objection, form.

7 THE WITNESS: I go through very specific
8 list of side effects and effects with my patients with
9 that medication.

10 BY ATTORNEY BROOKS:

11 Q. You regularly tell parents using the word that
12 puberty blockers are, quote, safe, do you not?

13 ATTORNEY BORELLI: Objection, form.

14 THE WITNESS: I am telling my patients
15 the risks and benefits. I am telling them I feel
16 comfortable using it.

17 BY ATTORNEY BROOKS:

18 Q. Let's find your report, which is Exhibit 1 ---
19 no --- yes, Exhibit 1. If you can find your report.
20 Apologize. Too much paper. Too long a day.

21 Dr. Adkins, do you or do you not tell parents
22 that puberty blockers are safe?

23 ATTORNEY BORELLI: Objection, form.

24 THE WITNESS: Again, I review the effects

1 and side effects and my general experience and the
2 publications that are available. Goodness gracious.
3 Boy, that lunch is getting me.

4 I explain to my patients the effects and
5 side effects and I talk with them about whether --- my
6 experience has been I have had very few patients
7 experience a problem with the medication.

8 BY ATTORNEY BROOKS:

9 Q. And if you are unwilling to sit here today and
10 admit that you tell parents that puberty blockers are
11 safe then why have you stated in your expert report to
12 the court that treatment, including puberty blockers,
13 are safe?

14 ATTORNEY BORELLI: Objection, form.

15 THE WITNESSS: Every patient is
16 individual. I have to make an individual assessment for
17 each patient. I will say it's safe for the patients
18 that that applies to.

19 BY ATTORNEY BROOKS:

20 Q. Which patients does that apply to?

21 A. Most of the patients don't have a
22 contraindication to using puberty blockers.

23 Q. Is safe a term of art to you as a doctor?

24 ATTORNEY BORELLI: Objection, form.

1 THE WITNESS: I'm not sure what you mean
2 by the word art.

3 BY ATTORNEY BROOKS:

4 Q. Does it have a precise meaning? To say a
5 pharmaceutical is safe, does that have a meaning to you
6 as a doctor?

7 A. It has a meaning.

8 Q. What is that?

9 A. So in general when we're talking about safety
10 and medicine we're talking about limiting the number of
11 negative side effects that can cause significant issues
12 for patients. I think that would --- I think that's
13 what I would say.

14 Q. Isn't it a truism you were taught in medical
15 school that every pharmaceutical has side effects?

16 ATTORNEY BORELLI: Objection, form.

17 THE WITNESS: So truism is a word that
18 --- sorry, that is unclear to me. Can you clarify?

19 BY ATTORNEY BROOKSS:

20 Q. Weren't you taught in medical school that every
21 pharmaceutical has side effects?

22 ATTORNEY BORELLI: Object to form.

23 THE WITNESS: Yes.

24 BY ATTORNEY BROOKS:

1 Q. And do you agree or disagree that a flat
2 assertion that any pharmaceutical is safe is not
3 consistent with accurate medical terminology?

4 ATTORNEY BORELLI: Objection, form.

5 THE WITNESS: I would say that I work
6 with what the information is available to me about
7 safety profile. I apply that to each patient
8 individually. Sometimes I feel safer using it in one
9 patient versus another patient. Every drug is
10 different, every side effect profile is different, every
11 patient is different.

12 BY ATTORNEY BROOKS:

13 Q. Why then did you flatly assert to the court that
14 treatment for transgender youth when you were discussing
15 puberty blockers and hormone therapies is, quote, safe?

16 ATTORNEY BORELLI: Objection to form.

17 THE WITNESS: In general I have not
18 experienced nor have I seen published experiences of
19 issues with using these medications that causes a
20 significant problem for my patients.

21 BY ATTORNEY BROOKS:

22 Q. You regularly tell parents what you have said
23 several times today, that puberty blockers act merely as
24 a pause and are fully reversible, do you not?

1 ATTORNEY BORELLI: Objection, form.

2 THE WITNESS: I do.

3 BY ATTORNEY BROOKS:

4 Q. And you are aware, are you not, that the
5 Endocrine Society guidelines advise that before
6 approving puberty blockers a clinician should discuss
7 risks to fertility and the availability, the possibility
8 of fertility preservation.

9 Correct?

10 ATTORNEY BORELLI: Objection, form.

11 THE WITNESS: I'm not sure that is in the
12 Endocrine Society guidelines with puberty blockers. It
13 may be. That it is no part of the gender affirming
14 hormone recommendation.

15 BY ATTORNEY BROOKS:

16 Q. Let's look at page 3879 in the guidelines,
17 Exhibit 4.

18 A. What exhibit again, 4?

19 Q. Exhibit 4. And I'm going to call your attention
20 to 3879. And column two is guideline 1.5 where it says,
21 quote, we recommend the clinicians inform and counsel
22 all individuals seeking gender affirming medical
23 treatment regarding options for fertility preservation
24 prior to initiating puberty suppression in adolescence.

1 Do you see that language?

2 ATTORNEY BORELLI: Objection, form.

3 THE WITNESS: I do.

4 BY ATTORNEY BROOKS:

5 Q. And what is your understanding as to why the
6 Endocrine Society advises that it's important to advise
7 about fertility preservation prior to initiating puberty
8 suppression if puberty suppression is nearly nothing but
9 a pause?

10 ATTORNEY BORELLI: Objection, form.

11 THE WITNESS: Well, the --- you know,
12 puberty pausing is in my experience and in the reported
13 data always reversible. I have not ever had a patient
14 who didn't resume their normal puberty when they came
15 off and were on no other treatment of a puberty
16 blockade. I would think that this is being very careful
17 about young individuals getting puberty blockers.
18 Again, I haven't seen any reports. In fact, it is used
19 to preserve fertility in cancer patients.

20 BY ATTORNEY BROOKS:

21 Q. Do you, in fact, counsel all parents and
22 children about fertility preservation options before
23 administering puberty blockers?

24 ATTORNEY BORELLI: Objection, form.

1 THE WITNESS: I do.

2 BY ATTORNEY BROOKS:

3 Q. And do you have a view as to whether for
4 instance a 9 year old can even begin to understand
5 puberty, sexual development and the possibility of
6 becoming a parent so as to provide meaningfully informed
7 consent?

8 ATTORNEY BORELLI: Objection, form.

9 THE WITNESS: So those individuals also
10 have their parents who are with them to learn about
11 these thing and weigh those things. The patient is not
12 there in isolation. They get an option at the time
13 where we would stop puberty blockers or any time that
14 they are on to make a change in that. It is completely
15 reversible.

16 BY ATTORNEY BROOKS:

17 Q. You have testified at the beginning of the day
18 you had children of your own. Both as a professional
19 and as a mother do you have a view as to whether a 9
20 year old can sufficiently understand puberty, sexual
21 development and the possibility of becoming a parent to
22 enable them to provide meaningfully informed consent?

23 ATTORNEY BORELLI: Objection, form.

24 THE WITNESS: So in young kids we use

1 these --- in five year olds --- I have treated a five
2 year old this week with this medication for early
3 puberty. I trust, based on the data that is available
4 to me over the last 30 years using this medication to
5 pause puberty for central precocious puberty that it is
6 a safe medication and that the patient will be fertile.
7 Can't say 100 percent because who knows what else is
8 going on in each individual patient that may cause them
9 to have an infertility issue.

10 BY ATTORNEY BROOKS:

11 Q. Dr. Adkins, puberty blocking drugs have gone
12 through phase one, phase two, phase three clinical
13 trials submitted to the FDA, reviewed. They've been
14 approved for the indication of precocious puberty.

15 Correct?

16 ATTORNEY BORELLI: Objection, form.

17 THE WITNESS: Yes.

18 BY ATTORNEY BROOKS:

19 Q. None of that has been done for an indication of
20 gender dysphoria to your knowledge.

21 Correct?

22 ATTORNEY BORELLI: Objection, form.

23 THE WITNESS: I use lots of medications
24 that aren't FDA approved for the particular indications.

1 Many drugs in pediatrics are not ever tested in
2 children. It's just within the last few years that they
3 have made a recommendation that that happen for a
4 medication. So there are many drugs that haven't been
5 FDA approved that are used in pediatrics based on
6 information for patients in a different indication or
7 adulthood.

8 Q. Puberty blockers have been tested through phase
9 one, phase two, phase three clinical trials for the
10 purpose of postponing precocious puberty until the
11 normal time period for puberty.

12 Correct? That's what has been tested?

13 ATTORNEY BORELLI: Objection to form.

14 THE WITNESS: Yes.

15 BY ATTORNEY BROOKS:

16 Q. And no such tests have been done or submitted to
17 the FDA ---?

18 COURT REPORTER: Can you repeat what you
19 said because I'm not sure that last question fully came
20 through.

21 ATTORNEY BROOKS: The last question was
22 --- and I --- I admit that my voice, as the witness's,
23 is dropping. We're trying here. And I --- Dave's
24 resting his voice for a few questions towards the end of

1 the day. I'll be glad.

2 BY ATTORNEY BROOKS:

3 Q. Just to clarify, and I don't mean to harass you,
4 but we've been asked to repeat it. Puberty blockers
5 have been put through phase one, phase two, phase three
6 clinical trials submitted to the FDA for the purpose of
7 delaying precocious puberty in children until the normal
8 time for puberty. And your answer was?

9 ATTORNEY BORELLI: Objection, form.

10 THE WITNESS: Yes.

11 BY ATTORNEY BROOKS:

12 Q. And they have not been tested for safety, for
13 efficacy in phase one, phase two or phase three clinical
14 trials for the purpose of delaying puberty from its
15 naturally occurring time in children who do not suffer
16 from precocious puberty.

17 Correct?

18 ATTORNEY BORELLI: Objection, form.

19 THE WITNESS: We use data that wasn't
20 presented to the FDA to --- to look at this to see if it
21 is safe. It's also been approved by the FDA to be used
22 in adults. Also been used and approved for fertility
23 preservation. Has lots of approvals that have verified
24 its safety over time.

1 BY ATTORNEY BROOKS:

2 Q. Well, a moment ago when I asked you if you tell
3 people they were safe you were not quite willing to say
4 that. Do you want to revise that testimony?

5 ATTORNEY BORELLI: Objection, form.

6 THE WITNESS: I believe at the end of
7 that I was saying to you that every patient is
8 different. There are some that have risks. When I feel
9 comfortable that my patient in front of me doesn't have
10 those risks based on the medical literature I feel that
11 they're safe to use. I have my experience. I have seen
12 the literature. I feel --- yes.

13 BY ATTORNEY BROOKS:

14 Q. The law that's being challenged in this lawsuit
15 doesn't restrict the use of puberty blockers so far as
16 you understand, does it?

17 ATTORNEY BORELLI: Objection, form.

18 THE WITNESS: I don't recall that being
19 part of the law.

20 BY ATTORNEY BROOKS:

21 Q. It doesn't exclude anyone for participation on
22 any team based on use of puberty blockers, does it?

23 ATTORNEY BORELLI: Objection, form.

24 THE WITNESS: Not that I recall.

1 BY ATTORNEY BROOKS:

2 Q. And you have previously testified that in your
3 view, the law is unreasonable if it excludes, prevents
4 any individuals with a transgender identity from playing
5 in the category that corresponds to their gender
6 identity.

7 Correct?

8 ATTORNEY BORELLI: Objection, form.

9 THE WITNESS: That sounds accurate.

10 BY ATTORNEY BROOKS:

11 Q. I don't want to mischaracterize your opinion.

12 Okay.

13 So what is the relevance to your opinion that
14 all the discussions in your report about puberty
15 blockers?

16 ATTORNEY BORELLI: Objection, form.

17 THE WITNESS: Sorry. I need some water.
18 And then, if you don't mind, while I'm doing that, could
19 you please re-read the question. Sorry.

20 BY ATTORNEY BROOKS:

21 Q. Yes. I'll even wait until you've had your
22 drink.

23 A. Sorry.

24 Q. I'm hitting the bottom myself.

1 A. It's pollen season. It's bad.

2 Q. It's just getting going.

3 A. I know.

4 Q. Given what we just walked through, ---

5 A. Yes.

6 Q. --- what is the relevance of all the discussion
7 about puberty blockers in your expert report and
8 rebuttal report to the opinions you're offering in this
9 case?

10 ATTORNEY BORELLI: Objection, form.

11 THE WITNESS: So my part of this is to
12 talk about what care is for people who are transgender
13 and what medications they might be on and what
14 treatments might be ideal for them.

15 BY ATTORNEY BROOKS:

16 Q. You've talked about how each --- you want to
17 treat each patient differently. You want to be very
18 careful about their treatment choices, their parents'
19 treatment choices, that they understand all of the
20 considerations.

21 Would it cause you concern if West Virginia put
22 into place a law that created incentives or pressures on
23 parents and children to make decisions about puberty
24 blockers at an early stage?

1 ATTORNEY BORELLI: Objection, form.

2 THE WITNESS: I would not think it would
3 be appropriate to pressure anyone.

4 BY ATTORNEY BROOKS:

5 Q. So for instance, a law that said if you take
6 puberty blockers then you can play on the girls team and
7 if you don't you can't, that would cause you concern as
8 a doctor, would it not?

9 ATTORNEY BORELLI: Objection, form.

10 THE WITNESS: Ideally, they would be able
11 to whether or not they have the puberty blockers or not
12 play on the team that matches their gender identity.

13 BY ATTORNEY BROOKS:

14 Q. And ideally and from your perspective and in
15 fact if the law set up an incentive that says you can
16 only play on the girls' team if you take puberty
17 blockers, and if you don't, you're foreclosed from female
18 athletics, that would cause you concern as a doctor as
19 biasing the patient's and parents' decisions, would it
20 not?

21 ATTORNEY BORELLI: Objection, form.

22 BY ATTORNEY BROOKS:

23 Q. That's not a law you would want to see on the
24 books?

1 ATTORNEY BORELLI: Objection, form.

2 THE WITNESS: I don't think I would want
3 to see that on the books. Haven't thought through every
4 detail of that but I don't think so.

5 BY ATTORNEY BROOKS:

6 Q. You are aware, are you not, that all the
7 recommendations in the 2017 guidelines, also in the 2009
8 guidelines from the Endocrine Society about the
9 administration of puberty blockers is according to the
10 committee that prepares those recommendation based on
11 either low quality or very low quality evidence.

12 Right?

13 A. You know, all recommendation put together are
14 graded with evidence, and it's in the report --- we use
15 them --- not in the report, in the guidelines. And we
16 use lots of guidelines that have low quality to help
17 guide our care.

18 Q. Low quality evidence means that you, as a
19 scientist, you as a doctor, can't be very confident that
20 the recommendation will result in beneficial results.
21 That is kind of the meaning of low quality evidence.

22 Right?

23 ATTORNEY BORELLI: Objection to form.

24 THE WITNESS: I would suggest it gives us

1 a place to start and we need to be very mindful when
2 using that information as to how we apply it.

3 ATTORNEY BORELLI:

4 Why don't we go ahead and take another
5 break?

6 ATTORNEY BROOKS: Let me just ask the
7 court reporter how many --- how much more time in the
8 seven o'clock hours.

9 COURT REPORTER: We're at six hours and
10 six minutes, so 54 minutes.

11 ATTORNEY BROOKS: Okay. We'll take that
12 break. Absolutely.

13 ---
14 (WHEREUPON, A PAUSE IN THE RECORD WAS HELD.)

15 ---
16 ATTORNEY BROOKS:

17 All right. We will resume.

18 BY ATTORNEY BROOKS:

19 Q. Dr. Adkins, once again I will direct you to the
20 Endocrine Society guidelines, Exhibit 4, and ask you to
21 turn with me to page 3874 and column two --- column one,
22 I'm sorry 3874.

23 A. Column ---?

24 Q. Column one. And towards the bottom, penultimate

1 paragraph begins in the future we need. Do you see
2 that?

3 A. I do.

4 Q. And it says in the future --- this is in the
5 preliminary section. Before the specific
6 recommendations it says, quote, in the future we need
7 more rigorous evaluations of the effectiveness and
8 safety of endocrine and surgical protocols. And it goes
9 on then to say specifically endocrine protocol ---
10 specifically endocrine treatment protocols for GD/gender
11 incongruence should include the careful assessment of
12 the following. And it lists a number of things, the
13 effective prolonged delay of puberty in adolescence on
14 bone health, gonadal function and the brain, including
15 effects on cognitive, emotional --- emotional, social
16 and sexual development.

17 Have I, with various corrections, read that
18 correctly?

19 A. Yes.

20 Q. So as of 2017, in the opinion of the committee
21 that put together these guidelines ---.

22 COURT REPORTER: Excuse me. I don't know
23 if you're speaking, but I lost you at cognitive.

24 ATTORNEY BROOKS: I'm sorry?

1 COURT REPORTER: I lost you at cognitive
2 and then I didn't hear anything for like 20 seconds. So
3 I wasn't sure if you were still talking since I can't
4 see you.

5 ATTORNEY BROOKS: Of course. And I was.
6 So, golly.

7 COURT REPORTER: Thank you.

8 BY ATTORNEY BROOKS:

9 Q. So I'm going to pick up that question again.
10 In the paragraph that we're looking at in
11 column one of page 3874 the committee writes that things
12 that need to be better studied include, quote, the
13 effects of prolonged delay of puberty in adolescence on
14 bone health, gonadal function and the brain, including
15 effects on cognitive, emotional, social and sexual
16 development, closed quote.

17 Dr. Adkins, is it your understanding that the
18 committee here is saying that there's not yet adequate
19 scientific evaluation of the impact of puberty blockers
20 on the brain?

21 ATTORNEY BORELLI: Objection, form.

22 THE WITNESS: So you know, the
23 recommendation by the same group is that in some
24 patients this is the approach that --- that is used.

1 Certainly we all welcome more research. We all want to
2 know if anything is different from the information that
3 we have as mentioned before for use of this medication
4 in other areas where we're not seeing any effect on
5 these things.

6 BY ATTORNEY BROOKS:

7 Q. Is it consistent with your understanding as a
8 doctor that the development of the brain in turn affects
9 cognitive, emotional, social and sexual development?

10 ATTORNEY BORELLI: Objection, form.

11 THE WITNESS: The brain has effects in
12 all those areas.

13 BY ATTORNEY BROOKS:

14 Q. To your knowledge, it has effects that change
15 across the course of puberty in all those areas.

16 Correct?

17 ATTORNEY BORELLI: Objection, form.

18 THE WITNESS: Yes, they're all
19 interrelated and they're occurring all at the same time.

20 ATTORNEY BROOKS: Let me mark as Exhibit
21 a document that is titled Teenage Brain: A work in
22 Progress, which is an information sheet that is
23 attributes itself to the National Institute of Mental
24 Health, which I believe we discussed earlier. Tab 32.

1 Yes, thank you. I'm sorry, I believe I said it, Exhibit
2 21.

3 ---
4 (Whereupon, Adkins Exhibit 21, NIMH
5 Information Sheet, was marked for
6 identification.)

7 ---

8 BY ATTORNEY BROOKS:

9 Q. So I would like to talk for a moment about the
10 impact of puberty and therefore puberty blockade on
11 brain development. On the second page at the more
12 information, we see contact information at the National
13 Institute of Mental Health. And I don't want to
14 misrepresent, did you earlier testify that is a well
15 known and respected source of information about mental
16 health therapies?

17 ATTORNEY BORELLI: Objection, form.

18 THE WITNESS: Yes.

19 BY ATTORNEY BROOKS:

20 Q. And let me take you to page one. And I'm simply
21 using this to pin down a few kind of basic points. In
22 the second column out of three, two-thirds of the way
23 down, three-quarters of the way down --- well, the
24 sentence begins halfway down. In the first such

1 longitudinal study of 145 children. Do you see that?

2 A. I see that.

3 Q. And it goes on to describe research that
4 discovered the second wave of overproduction of gray
5 matter, which it refers to as, quote, the thinking part
6 of the brain, just prior to puberty. Do you see that?

7 A. I do.

8 Q. And it goes on to say that this second
9 overproduction peaks at around age 11 in girls and 12 in
10 boys. Do you see that?

11 A. Yes.

12 Q. And according to your earlier testimony, that is
13 probably a bit into --- on average a bit into Tanner
14 stage two.

15 Correct?

16 ATTORNEY BORELLI: Objection, form.

17 THE WITNESS: In general.

18 BY ATTORNEY BROOKS:

19 Q. So a little later than the beginning of Tanner
20 stage two?

21 ATTORNEY BORELLI: Objection, form.

22 THE WITNESS: Based on averages, yes.

23 BY ATTORNEY BROOKS:

24 Q. So this second wave of development of the

1 thinking part of the brain happens sometime a bit after
2 the beginning of Tanner stage two according to this
3 description here?

4 ATTORNEY BORELLI: Objection, form.

5 THE WITNESS: So let me read it myself.

6 BY ATTORNEY BROOKS:

7 Q. Sure.

8 A. What you read was --- it starts before that. So
9 I just want to read it.

10 Q. I did misspeak. Let me just re-ask my question
11 ---

12 A. Okay.

13 Q. --- because I mixed up peaks and starts, right,
14 that was the problem.

15 According to the description here this second
16 wave of development of the thinking part of the brain,
17 the gray matter, peaks at sometime after the beginning
18 of Tanner stage two?

19 ATTORNEY BORELLI: Objection, form.

20 THE WITNESS: Peaks, yes.

21 BY ATTORNEY BROOKS:

22 Q. And is it consistent with your understanding
23 that the gray matter in the brain is the thinking part
24 of the brain or is that really outside your expertise

1 given that you're not a neurologist?

2 ATTORNEY BORELLI: Objection, form.

3 THE WITNESS: I think that that is basic
4 enough in medical school that I can agree with that.

5 BY ATTORNEY BROOKS:

6 Q. Okay.

7 And in the next column, about the same distance
8 down it reads, quote, the gray matter spurt --- growth
9 spurt just prior to puberty --- we've already talked
10 about the timing, predominates in the frontal lobe,
11 which it goes on to say is the seat of, quote, executive
12 functions, planning, impulse control, and reasoning,
13 closed quote.

14 Do you see that?

15 A. I do.

16 Q. And is it within your knowledge or not within
17 your knowledge that the frontal lobe is the seat of
18 executive functions, including planning, impulse control
19 and reasoning?

20 ATTORNEY BORELLI: Objection, form.

21 THE WITNESS: That is what my education
22 has informed me.

23 BY ATTORNEY BROOKS:

24 Q. And certainly all of us you who have raised

1 children have gratefully seen that planning, impulse
2 control and reasoning improve across the years of
3 puberty.

4 Right?

5 ATTORNEY BORELLI: Objection, form.

6 BY ATTORNEY BROOKS:

7 Q. Maybe some ups and some downs?

8 A. I'm am just happy that it continuously improves
9 the whole time.

10 Q. I won't press --- I won't pres the question.
11 Have you, yourself, attempted to make any study of the
12 timing of brain gray matter development and the role of
13 puberty hormones in promoting that development?

14 ATTORNEY BORELLI: Objection, form.

15 THE WITNESS: I have not.

16 BY ATTORNEY BROOKS:

17 Q. What study, if any, have you made of the effects
18 of blocking puberty and the increased level of hormones
19 associated with puberty on this growth spurt in the
20 thinking part of the brain that otherwise peaks at
21 around 11 in girls and 12 in boys?

22 ATTORNEY BORELLI: Objection, form.

23 THE WITNESS: I have not done that study.

24 I don't see it here either.

1 BY ATTORNEY BROOKS:

2 Q. You said in your rebuttal report, paragraph 24,
3 that patients with gender dysphoria who are treated with
4 puberty delaying medication undergo hormonal puberty
5 with all the same brain and other bodily system
6 development. Do you recall writing that?

7 ATTORNEY BORELLI: Objection, form.

8 THE WITNESS: I'm sorry, could you ---?

9 BY ATTORNEY BROOKS:

10 Q. Right in front of you. Your rebuttal report is
11 --- Exhibit 3?

12 A. I got it.

13 Q. Paragraph 24.

14 A. Thank you for your patience.

15 Q. Here, let me just find it. Let me see here.
16 And the second sentence says, quote, patients with
17 gender dysphoria treated with puberty delaying
18 medication undergo hormonal puberty with all the same
19 brain and other bodily system development, closed quote.
20 Do you see that?

21 A. Oh, wait. I must be looking at the wrong place.

22 Q. Paragraph 24, second sentence. It runs over the
23 page?

24 A. I see. I see. Yeah. I see that.

1 Q. Now, all the same brain and bodily development
2 is a really big absolute statement, isn't it?

3 ATTORNEY BORELLI: Objection, form.

4 THE WITNESS: There are --- you know, for
5 the most part, people go through it in this manner. Of
6 course, again, with medicine you can't say 100 percent.

7 BY ATTORNEY BROOKS:

8 Q. Well, specifically, as a scientist, based on the
9 information available to you, you can't say with
10 confidence that patients who are treated with puberty
11 delaying medication undergo all the same brain and
12 bodily system development, can you?

13 ATTORNEY BORELLI: Objection, form.

14 THE WITNESS: I used the medication for
15 all of my career. I have followed patients through
16 their --- into their puberty, in their growth. When
17 they are done with their pubertal development, we have
18 not seen any definable cognitive developmental issues
19 with them. Haven't been able to identify that with any
20 of my patients, including precocious puberty. There's
21 not been any evidence in the literature over a year's
22 worth of use of this medication that there's anything
23 different happening to these individuals.

24 BY ATTORNEY BROOKS:

1 Q. Well, you also haven't done any systematic study
2 of cognitive development of those for whom you have
3 prescribed puberty blockers as compared to in a control
4 group, have you?

5 ATTORNEY BORELLI: Objection, form.

6 THE WITNESS: Not personally.

7 BY ATTORNEY BROOKS:

8 Q. And the --- the Endocrine Society, 2017 --- let
9 me ask you to turn in Exhibit 4 to page 3882. And we
10 are in the section here that discusses a recommendation
11 to use GRNH for purposes of puberty suppression when
12 puberty suppression is indicated. Do you see that?
13 That heading is on the previous page.

14 A. I see that.

15 Q. Just wanted to locate you in the discussion
16 we're talking about puberty suppression. Now, back to
17 3882. And the first thing --- the first sentence under
18 the heading side effects states that, quote, the primary
19 risks of puberty suppression in GD/gender incongruent
20 adolescents may include and then it lists a number of
21 things, one of which is, quote, unknown effects on brain
22 development, closed quote. Do you see that?

23 A. I do.

24 Q. So the committee that put together the Endocrine

1 Society guidelines thought that the potential effects of
2 puberty suppression on brain development were at 2017 at
3 least unknown. You just disagreed?

4 ATTORNEY BORELLI: Objection, form.

5 THE WITNESS: I don't have any reason to
6 believe that there's any different effect on individuals
7 based on the research from early puberty and the studies
8 that --- I mean, sorry, my experience with those
9 patients. I would want to be watchful of those
10 individuals as I would always who use any medication for
11 potential issues.

12 BY ATTORNEY BROOKS:

13 Q. Endocrine Society thinks the effect on brain
14 development is unknown and you, though you have done no
15 systematic study, are of the view that you know that is
16 not harmful to brain development. Am I accurately
17 summarizing your testimony?

18 ATTORNEY BORELLI: Objection.

19 THE WITNESS: No.

20 BY ATTORNEY BROOKS:

21 Q. Let me ask it a different way if that was in
22 accurate.

23 A. I am trying to tell you that you are able to
24 look at the use of this medication in early pubertal

1 patients and see what happens to those individuals.
2 Those outcomes can be used to give you some inference as
3 to what might potentially happen if you use it later on
4 for the same purpose of delaying puberty. It doesn't
5 --- doesn't wholly rule out something different.

6 Q. And indeed, simply based on observation,
7 nonsystematic observations from one clinic, it's not
8 possible to rule out harmful effects on brain
9 development, is it?

10 ATTORNEY BORELLI: Objection, form.

11 THE WITNESS: I'm not sure that there's
12 any study you could do to completely rule out any effect
13 --- any specific effect. Lots of individuals have
14 different effects.

15 BY ATTORNEY BROOKS:

16 Q. And you in your clinic haven't attempted any
17 study?

18 ATTORNEY BORELLI: Objection, form.

19 THE WITNESS: I have not done a study.

20 BY ATTORNEY BROOKS:

21 Q. Let me have tab 43. In your report you asserted
22 that those treated with gender dysphoria undergo --- I'm
23 sorry, those treated with puberty delaying medication
24 experience all the same brain and other bodily system

1 developments. The only source you cite in support of
2 that is a 2015 article by Staphorsius.

3 Correct?

4 A. I would have to look at it and verify that.

5 Q. Forty-three (43).

6 A. Which exhibit were you ---?

7 Q. I have not given it to you yet. I apologize.

8 A. No, I mean ---.

9 Q. Oh, it was paragraph 24 in your rebuttal report,
10 which is ---.

11 A. Okay.

12 Q. All right.

13 Did you carefully read the Staphorsius article
14 that you cited in paragraph 24 of your rebuttal report?

15 A. At some point in time I have read that, yes.

16 Q. Are you able to describe the experiment that is
17 --- the study that was done in this Staphorsius report
18 --- or the Staphorsius article?

19 ATTORNEY BORELLI: Objection.

20 THE WITNESS: I'm not --- familiar ---.

21 BY ATTORNEY BROOKS:

22 Q. You say also in paragraph 24 of your rebuttal
23 report that Dr. Levine's claims with regard to concern
24 about brain development is, quote, inaccurate for the

1 additional reason that some people never go through
2 hormonal puberty such as patients with Turner syndrome
3 and still have normal brain development with respect to
4 cognition and executive function. Do you see that
5 language?

6 A. Yes.

7 Q. And you don't cite anything for that. What is
8 the basis for that assertion?

9 A. So when you look at the information regarding
10 Turner syndrome within the medical literature as well as
11 the --- my work with Marsha Gavenport at UNC who runs
12 --- ran the biggest Turner syndrome registry, in that
13 experience we did not see any patients that had problems
14 with --- there may have been some that were --- had sort
15 of issues with visual spatial skills but not cognitive
16 issues. In fact, I have partners that are women with
17 Turner syndrome that practice medicine.

18 Q. You will agree with me as a scientist, will you
19 not, that kind of anecdotal information about a
20 particular person you know is not very weighty evidence
21 as to whether hormone changes associated with puberty
22 are generally important to cognitive development of
23 humans?

24 ATTORNEY BORELLI: Objection, form.

1 THE WITNESS: We can delve into Turner
2 syndrome literature.

3 BY ATTORNEY BROOKS:

4 Q. Well, Dr. Adkins, I hope you understand that
5 your obligation to prepare an expert report was to
6 provide your opinions and the basis of your opinions.
7 What literature are you relying on?

8 ATTORNEY BORELLI: Objection, form.

9 THE WITNESS: Every textbook that talks
10 about Turner syndrome with regard to these patients
11 talks about any of the issues that go along with that.
12 I --- and that's something we study in our training as a
13 pediatric endocrinologists because we see these patients
14 routinely. So that has been my experience and training.

15 BY ATTORNEY BROOKS:

16 Q. Well, can you identify --- every is not very
17 useful. Can you identify for me a single source that
18 reports based on statistically significant studies that
19 individuals who never go through puberty experience all
20 the same brain development as individuals who do go
21 through puberty?

22 ATTORNEY BORELLI: Objection, form.

23 THE WITNESS: I would have to look back
24 in the literature on those reports because we treat

1 patients now when we realize they are not going through
2 puberty. I can't do that off the top of my head.

3 BY ATTORNEY BROOKS:

4 Q. And are you now contending that it is not widely
5 accepted that hormonal changes associated with puberty
6 drive important stages of brain growth?

7 ATTORNEY BORELLI: Objection, form.

8 THE WITNESS: I'm not saying that. What
9 I'm saying is there are some things that are specific
10 and you're generalizing my terms.

11 BY ATTORNEY BROOKS:

12 Q. Okay.

13 Well, flipping it around, you have also been
14 taught whether or not it's --- if we're speaking in the
15 area, I recognize you're not a neurologist.

16 Correct?

17 A. Correct.

18 Q. But it's your understanding that hormonal
19 changes associated with puberty do drive important
20 developmental stages in the human brain.

21 Correct?

22 ATTORNEY BORELLI: Objection, form.

23 THE WITNESS: Yes.

24 BY ATTORNEY BROOKS:

1 Q. And those are stages that, as we looked at in
2 earlier document, include cognition, social skills,
3 sexual development?

4 ATTORNEY BORELLI: Objection, form.

5 THE WITNESS: So you know, that is what
6 is --- was written there. I agree that that can be
7 affected by those --- by puberty. I also don't see in
8 any of the literature around people who haven't gone
9 with --- through puberty any mention of any of the
10 concerning cognitive delays or other issues, again
11 visual, spatial has been mentioned.

12 BY ATTORNEY BROOKS:

13 Q. Visual spatial, can you just --- for the
14 uninitiated, the layman, can you explain what you're
15 referring to?

16 A. For the use of like driving a car, looking at
17 something and being able to estimate where it is or
18 those sorts of things, navigating with a map versus not.

19 ATTORNEY BROOKS: Let me ask the court
20 reporter how many minutes we still have on the clock.

21 COURT REPORTER: We're at six hours, 31
22 minutes, so 29.

23 ATTORNEY BROOKS: Well, I had promised to
24 hand it over with 30 minutes to go, so I have broken my

1 word. And I will stop and leave the remainder of the
2 time to counsel for the State of West Virginia, Dave
3 Tryon.

4 ---

5 EXAMINATION

6 ---

7 BY ATTORNEY TRYON:

8 Q. Hello, Dr. Adkins. Long day. I appreciate your
9 time. My name is David Tryon and I do represent the
10 State of West Virginia. I would like just to ---.

11 A. You're cutting out.

12 Q. Okay.

13 ATTORNEY BROOKS: You are going to have
14 to speak up very clearly because you are literally
15 disappearing half of the time and we have no work around
16 for that.

17 BY ATTORNEY TRYON:

18 A. Okay.

19 I will speak very loudly. Can you hear me now?

20 A. Yes.

21 Q. Okay.

22 So thank you for your time my. Name is David
23 Tryon. I am an attorney for the State of West Virginia.
24 I would like to continue with some questions about your

1 rebuttal report. Do you still have that in front of
2 you?

3 A. Yes.

4 Q. Okay.

5 First of all, you have indicated that you are
6 --- I'm still here --- give me a moment --- you run a
7 clinic.

8 Correct?

9 ATTORNEY BORELLI: Objection, form.

10 THE WITNESS: I have a clinic that I'm
11 the medical director of, yes.

12 BY ATTORNEY TRYON:

13 Q. And that is --- I'm sorry, what's the name of
14 the clinic again?

15 A. Duke Child and Adolescent Gender Clinic.

16 Q. What is a gender care clinic?

17 A. For our purposes in my clinic it includes
18 patients who are transgender people who are --- also
19 have intersex conditions as well.

20 Q. Are there other clinics that you consider gender
21 care clinics elsewhere in the country?

22 A. Yes.

23 Q. Would you be able to estimate approximately how
24 many of them there are?

1 A. That number is changing a lot. It would be
2 difficult for me to say accurately.

3 Q. Would it be over 100?

4 A. I'm not sure. I'm not sure.

5 Q. Would it be over 50?

6 A. Oh, it could be definitely over 50. It could be
7 over 100, but I'm not sure.

8 Q. And are you --- do you have any meetings with
9 those other gender care clinics?

10 ATTORNEY BORELLI: Objection, form.

11 THE WITNESS: Yes.

12 BY ATTORNEY TRYON:

13 Q. How many --- what fashion --- are those
14 individual meetings or are they group meetings?

15 A. A bit of both.

16 Q. Are you aware of the practices of all of those
17 other gender care clinics?

18 ATTORNEY BORELLI: Objection, form.

19 THE WITNESS: We do talk about practice
20 when we meet with the ones that I meet with. Can't
21 speak to all of the others.

22 BY ATTORNEY TRYON:

23 Q. You are of course familiar with the practices in
24 your clinic.

1 Correct?

2 A. Yes.

3 Q. Are you equally familiar with the practices of
4 the other gender care clinics throughout the country?

5 ATTORNEY BORELLI: Objection, form.

6 THE WITNESS: I know a lot about them. I
7 can't say I know everything.

8 BY ATTORNEY TRYON:

9 Q. Do you know if they have the exact same
10 standards of care and practice that your clinic does?

11 ATTORNEY BORELLI: Objection, form.

12 THE WITNESS: We all have discussed that
13 we follow the Endocrine Society guidelines as well as
14 WPATH guidelines.

15 BY ATTORNEY TRYON:

16 Q. You have disagreed with some of the guidelines
17 in the WPATH guidelines that Mr. Brooks has shown to
18 you.

19 Correct?

20 ATTORNEY BORELLI: Objection, form.

21 THE WITNESS: I don't think I've seen the
22 WPATH guidelines today.

23 BY ATTORNEY TRYON:

24 Q. Sorry, the Endocrine Society guidelines?

1 ATTORNEY BORELLI: Same objection.

2 THE WITNESS: So the Endocrine Society
3 guidelines are guidelines. All of us who use guidelines
4 do vary some from those guidelines when it's appropriate
5 for the particular patient.

6 BY ATTORNEY TRYON:

7 Q. Do you know if the other clinics have the same
8 reservations about the policies or guidelines in those
9 --- in the endocrine Society's guidelines that you've
10 expressed today?

11 ATTORNEY BORELLI: Objection, form.

12 THE WITNESS: I've had some discussions
13 with people who have some reservations along the same
14 lines that I do.

15 BY ATTORNEY TRYON:

16 Q. How many clinics does that represent?

17 A. Oh, you went out. You went out. Sorry.

18 Q. How many clinics does that represent?

19 ATTORNEY BORELLI: Objection, form.

20 THE WITNESS: It's difficult for me to
21 say because it is at our annual meeting and for some of
22 the meetings, so it could be a lot. In group meetings
23 that we have, I have some that are one on one and I have
24 some that are about five different groups.

1 BY ATTORNEY TRYON:

2 Q. So fair to say you don't know?

3 A. I'm sorry, you broke up again.

4 Q. Is it fair to say you do not know?

5 ATTORNEY BORELLI: Objection, form.

6 THE WITNESS: I do not know what?

7 BY ATTORNEY TRYON:

8 Q. You do not know which ones have the same
9 reservations that you do about the provisions you've
10 expressed reservations about today?

11 ATTORNEY BORELLI: Objection, form.

12 THE WITNESS: I know --- I know --- I
13 know off the top of my head three. The others I may or
14 may not know where an individual is from when they're
15 talking in all of our meetings. They are big meetings.

16 BY ATTORNEY TRYON:

17 Q. What are those three?

18 A. So Rady Children's in Los Angeles and in
19 Seattle, Children's and Texas, Children's.

20 BY ATTORNEY TRYON:

21 Q. Are there any gender care clinics in West
22 Virginia?

23 ATTORNEY BORELLI: Objection to form.

24 THE WITNESS: I don't know personally any

1 endocrinologists that do pediatric endocrinology or
2 gender care in West Virginia. I'm not aware.

3 BY ATTORNEY TRYON:

4 Q. In the rebuttal report, your paragraph 11, I'd
5 like to ask you some questions about that. If you would
6 turn there.

7 A. I got it.

8 Q. When did you --- well, did you write this
9 paragraph 11?

10 ATTORNEY BORELLI: Objection, form.

11 THE WITNESS: Yes.

12 BY ATTORNEY TRYON:

13 Q. When did you write it?

14 ATTORNEY BORELLI: Objection, form.

15 THE WITNESS: I don't remember.

16 BY ATTORNEY TRYON:

17 Q. Was it after you received the expert reports
18 from the Plaintiff's experts --- excuse me, from the
19 Defendant's experts?

20 ATTORNEY BORELLI: Objection, form.

21 THE WITNESS: So we wrote the rebuttal
22 after we received the expert witnesses from --- yes.

23 BY ATTORNEY TRYON:

24 Q. Who is we?

1 A. I'm sorry. I wrote it --- I'm sorry. I'm
2 getting really tired. I apologize. I wrote it.

3 Q. In the --- I believe it is the third sentence
4 says no medical treatment is provided to transgender
5 youth until they have reached Tanner stage two. Do you
6 see that?

7 A. I do.

8 Q. When you say no medical treatment, is that ---
9 does that include affirmation therapy?

10 ATTORNEY BORELLI: Objection, form.

11 THE WITNESS: I am not aware of anything
12 called affirmation therapy.

13 BY ATTORNEY TRYON:

14 Q. Are you aware of the term affirmation for
15 transgender individuals?

16 ATTORNEY BORELLI: Objection, form.

17 THE WITNESS: Gender affirming care is a
18 term I am aware of.

19 BY ATTORNEY TRYON:

20 Q. Do you consider gender affirming care to be
21 medical treatment?

22 ATTORNEY BORELLI: Objection, form.

23 THE WITNESS: So it is meant to be
24 wholistic, so part of it is medical, part of it is

1 social, part of it is surgical.

2 BY ATTORNEY TRYON:

3 Q. Is any gender affirming care provided to
4 transgender youth before they reach Tanner stage two?

5 ATTORNEY BORELLI: Objection, form.

6 THE WITNESS: So the social transition is
7 considered part of gender affirming care and some
8 individuals do socially transition before Tanner stage
9 two.

10 BY ATTORNEY TRYON:

11 Q. Do you assist them in that?

12 ATTORNEY BORELLI: Objection, form.

13 THE WITNESS: Not typically. They're not
14 usually in my clinic until they are in puberty.

15 BY ATTORNEY TRYON:

16 Q. Is there any other type of gender affirming care
17 which is conducted or provided prior to Tanner stage
18 two?

19 ATTORNEY BORELLI: Objection, form.

20 THE WITNESS: Before Tanner stage two
21 generally it's -- no --- no. No.

22 BY ATTORNEY TRYON:

23 Q. What do you consider to be medical treatment
24 which is provided once they reach Tanner stage two?

1 ATTORNEY BORELLI: Objection, form.

2 THE WITNESS: Not every patient is
3 treated with medication. So some do, some don't.
4 Sometimes that is puberty blockers. Sometimes it is
5 not. Sometimes it is gender affirming hormones
6 depending on where they're in their development.

7 BY ATTORNEY TRYON:

8 Q. What about surgery, is that considered medical
9 treatment provided to transgender youth?

10 ATTORNEY BORELLI: Objection, form.

11 THE WITNESS: So patients who are
12 children aren't having surgeries.

13 BY ATTORNEY TRYON:

14 Q. What's the difference between youth and
15 children?

16 ATTORNEY BORELLI: Objection, form.

17 THE WITNESS: Youth in general in my mind
18 are somewhat similar to adolescents in that they have
19 started puberty.

20 BY ATTORNEY TRYON:

21 Q. At what point are --- is --- excuse me, at what
22 point or age is surgery, medical treatment, provided to
23 those who have gender dysphoria or considered to be
24 transgender?

1 ATTORNEY BORELLI: Objection, form.

2 THE WITNESS: So you cut out and could
3 you repeat the question?

4 BY ATTORNEY TRYON:

5 Q. Yes. Let me back up and make sure I understand.
6 Surgery is considered medical treatment.

7 Correct?

8 ATTORNEY BORELLI: Objection, form.

9 THE WITNESS: So I hesitate to use those
10 words. My surgical colleagues would take some offense
11 at that. They consider themselves surgeons and not
12 medicine doctors. So I think that's an opinion there.
13 So I'm not sure that that phrase is appropriate.

14 BY ATTORNEY TRYON:

15 Q. So when you refer to medical treatment in this
16 statement does that include or exclude surgery?

17 ATTORNEY BORELLI: Objection, form.

18 THE WITNESS: They do not --- yeah, that
19 would be inclusive of surgery in that particular
20 statement.

21 BY ATTORNEY TRYON:

22 Q. At what point is surgery provided to transgender
23 persons?

24 ATTORNEY BORELLI: Objection, form.

1 THE WITNESS: Well, not all individuals
2 who are transgender actually have surgery. It depends
3 on the patient. Many, many do not. Our recommendations
4 are to wait until 18. There is a caveat in the
5 Endocrine Society guidelines where some surgery could
6 happen between 16 and 18, but generally 18 and up.

7 BY ATTORNEY TRYON:

8 Q. Why wait until 18?

9 ATTORNEY BORELLI: Objection, form.

10 THE WITNESS: That is the --- as I
11 understand it, the legal time at which a person has ---
12 what is the word for it? You all are the legal people.
13 I'm probably going to say it wrong, the ability to
14 legally consent to things. Prior to that, we do get
15 what's called an assent from the patient, but it's a
16 little different than a consent from the patient if
17 we're doing a general procedure.

18 BY ATTORNEY TRYON:

19 Q. Why is that legal consent different for surgery
20 then it is for puberty blockers?

21 ATTORNEY BORELLI: Objection, form.

22 THE WITNESS: As I mentioned before,
23 puberty blockers aren't a permanent effect and surgery
24 is complicated to reverse.

1 BY ATTORNEY TRYON:

2 Q. At the point in time that you prescribe puberty
3 blockers for a natal male, that person has at that point
4 concluded that they have a gender identity of female.

5 Correct?

6 ATTORNEY BORELLI: Objection, form.

7 THE WITNESS: So for puberty blockers
8 they may not totally be clear on their gender identity.
9 They do have dysphoria with the changes that are
10 happening to their body at the time and need time to get
11 a better understanding of their gender identity.

12 BY ATTORNEY TRYON:

13 Q. At what point do we know that they have a full
14 understanding of their gender identity?

15 ATTORNEY BORELLI: Objection, form.

16 THE WITNESS: Again, we do our best to
17 take each patient as they get older and they are
18 consistent for a period of time. Again, the
19 recommendation are at least six months. Everyone is
20 different. Most of my patients' identity isn't changing
21 substantially. Their understanding of their identity
22 isn't changing substantially for longer than that before
23 one would do anything different other than puberty
24 blockers.

1 BY ATTORNEY TRYON:

2 Q. At what point --- someone comes to you and says
3 I am a biological male or assigned male at birth,
4 however you want to term that, but I identify it as a
5 --- let me rephrase that because I'm not sure I said
6 that right.

7 Someone comes to you and says I was born an
8 assigned male at birth, but I identify as a female. I
9 have identified as a female for two years now and I want
10 to move forward with any treatment possible so that I
11 can feel comfortable with my true identity as a female.
12 You accept that as their true identity?

13 ATTORNEY BORELLI: Objection, form.

14 THE WITNESS: You didn't give an age and
15 I do way that into consideration.

16 BY ATTORNEY TRYON:

17 Q. Let's say a ten year old?

18 ATTORNEY BORELLI: Objection, form.

19 THE WITNESS: So we as I mentioned in my
20 earlier testimony also use assessments from other
21 individuals with regard to the consistency of their
22 gender identity and including family as well as their
23 mental health providers and we would provide
24 individualized care based on that patient.

1 BY ATTORNEY TRYON:

2 Q. At that point do you actually give a diagnosis
3 that they are their true gender identity is female or
4 what happens?

5 ATTORNEY BORELLI:

6 Objection, form.

7 THE WITNESS: Again, gender identity is a
8 core part of their being and their understanding of it
9 at the time is their understanding of it at the time and
10 that is the only way that we can decide what someone's
11 gender identity is.

12 BY ATTORNEY TRYON:

13 Q. So at that point in time where the child is 10
14 or 12 or 14, at that point in time where they have
15 concluded my true gender identity is not my natal sex of
16 male but rather my true gender identity is a female, why
17 shouldn't that child then be able to say I want gender
18 --- I want surgery to remove my penis?

19 ATTORNEY BORELLI: Objection, form.

20 THE WITNESS: So we don't want to do
21 anything that's permanent until a person is older and
22 their cognitive development is broader. And in some
23 cases, you know --- well, I'll stop there.

24 BY ATTORNEY TRYON:

1 Q. If that child says, this is extremely harmful to
2 me to still have my penis at this age, I want it
3 removed, and you said yourself that is extremely harmful
4 to not allow this child to not play on a sports team
5 with which that child identifies, isn't having a penis
6 when the child doesn't want one even more harmful?

7 ATTORNEY BORELLI: Objection, form.

8 THE WITNESS: I think they're both ---
9 those situations could cause a risk for self harm and
10 suicide. We would not like to do something that is
11 permanent. Playing on a sports team is not something
12 that is unchangeable.

13 BY ATTORNEY TRYON:

14 Q. But you told me, you told us, that gender is
15 unchangeable and that child at that point has
16 identified as a female. And since that is not going to
17 change what is the harm in removing that child's penis?

18 A. You broke up after what is the harm in removing
19 that child.

20 Q. That child's penis?

21 ATTORNEY BORELLI: Objection, form.

22 THE WITNESS: I stated that their
23 understanding of their gender identity occurs over the
24 lifespan and so we want to be very careful with regard

1 to that --- any permanent treatment.

2 BY ATTORNEY TRYON:

3 Q. So you're saying you don't --- you're saying you
4 don't believe that that child's true identity is a
5 female, true gender identity is a female, you doubt that
6 child?

7 ATTORNEY BORELLI: Objection, form.

8 THE WITNESS: I don't doubt what my
9 patients tell me because --- what they tell me is their
10 truth and their identity. I do like --- think it is
11 important when you are making these decisions to again
12 corroborate that with other individuals who are with the
13 family --- I'm sorry, with the person. And we want to
14 make sure that that is a durable place where their
15 understanding is. Ideally, we would like for it to be
16 as understood as it might be before making a decision
17 that is a permanent decision like surgery.

18 VIDEOGRAPHER: Mr. Tryon, I sent you a
19 chat, I didn't know if you saw that. I just wanted to
20 give a five-minute warning.

21 ATTORNEY TRYON: Oh, it's five minutes
22 left? Thank you. I did not see that. One moment.

23 BY ATTORNEY TRYON:

24 Q. You are getting paid as an expert witness in

1 this case right?

2 ATTORNEY BORELLI: Objection, form.

3 THE WITNESS: Yes.

4 BY ATTORNEY TRYON:

5 Q. Are you being paid as an expert witness in
6 connection to any other litigation or testimony or any
7 other statutes --- similar statutes?

8 ATTORNEY BORELLI: Objection, form.

9 THE WITNESS: I am --- have not been
10 paid. I am involved in other --- another case, two
11 cases.

12 BY ATTORNEY TRYON:

13 Q. What are those other two cases?

14 A. I'm not going to be able to tell you the name
15 because I'm terrible with names. It involves
16 transgender care in Arkansas as well as in
17 sports-related issues with transgender youth in Florida.

18 Q. Have you testified in those cases yet?

19 A. I have not.

20 Q. You testified in other cases.

21 Right?

22 A. You broke up again. Could you repeat?

23 Q. You have testified in other cases.

24 Right?

1 A. Yes.

2 Q. Which cases are those?

3 A. The transgender-related cases were with Adams in
4 Florida. Why am I blanking?

5 Q. Connecticut?

6 A. I did not actually --- I have not been deposed
7 in --- except for Adams.

8 Q. Okay.

9 In your --- in your expert report you say that
10 I have testified twice as an expert at trial or
11 deposition.

12 A. Yeah, I was involved in another case as an
13 expert witness and was deposed for a case involving an
14 infant with fractures that were --- there was concern
15 for abuse.

16 Q. I'm sorry, you froze on me. Can you tell me
17 what that was again?

18 A. Yeah. There was a case that I was involved with
19 where the patient's parents --- they had concern for
20 abuse from the parents because the child had fractures.

21 Q. Well, I'm running out of time, so let me glance
22 through my notes and see if there is anything else. Do
23 you disagree with the policies of the other agents ---
24 excuse me, of the sporting organizations which require a

1 delay in time before a transgender female can
2 participate in those sports?

3 ATTORNEY BORELLI: Objection, form.

4 THE WITNESS: I think it would be better
5 for the patient if they did not have to delay.

6 BY ATTORNEY TRYON:

7 Q. So you --- if it was up to you, you would
8 eliminate that delay that is required by these other
9 sports organizations.

10 Is that right?

11 ATTORNEY BORELLI: Objection, form.

12 THE WITNESS: I think it would be better
13 for my patients. Yes.

14 BY ATTORNEY TRYON:

15 Q. And you think those organizations should change
16 their policies to satisfy what your concern is?

17 ATTORNEY BORELLI: Objection, form.

18 THE WITNESS: You know, there is a lot to
19 weigh there. I am not sure that I would be able to like
20 say for their purposes. I don't know all of the things
21 that are there. For my patients what would be best for
22 them is to not to have to have that delay.

23 BY ATTORNEY TRYON:

24 Q. But would you agree with me that the State of

1 West Virginia had a lot to weigh as well when it put in
2 place its legislation before they passed the law?

3 ATTORNEY BORELLI: Objection. Objection,
4 form.

5 THE WITNESS: I would hope that every
6 piece of legislation is weighed heavily.

7 BY ATTORNEY TRYON:

8 Q. And you would agree that in this case there was
9 a lot to weigh on a number of different issues before
10 they passed the law.

11 Correct?

12 ATTORNEY BORELLI: Objection, form.

13 THE WITNESS: I would agree. And I
14 wasn't there to know what was, so I agree there should
15 be.

16 BY ATTORNEY TRYON:

17 Q. I'm sorry. I didn't catch that. You froze up.
18 Can you repeat that?

19 A. Sure. I agree there should have been. I wasn't
20 there to hear what happened with regard to the process,
21 so I don't know if they actually did that.

22 ATTORNEY TRYON:

23 Thank you. Do I have any time left,
24 Jacob?

1 VIDEOGRAPHER: I think that's the cap.

2 ATTORNEY TRYON: Okay.

3 Dr. Adkins, thank you very much for your
4 time. Appreciate it.

5 ATTORNEY BORELLI: This is Tara Borelli
6 for Plaintiff, B.P.J.. Plaintiff has no questions for
7 the witness. We will read and sign.

8 VIDEOGRAPHER: That concludes this
9 deposition. Current time reads 5:56 p.m. Eastern
10 Standard Time.

11 * * * * *

12 VIDEOTAPED DEPOSITION CONCLUDED AT 5:56 P.M.

13 * * * * *

14

15

16

17

18

19

20

21

22

23

24

1 STATE OF WEST VIRGINIA)

2 CERTIFICATE

3 I, Lacey C. Scott, a Notary Public in
4 and for the State of West Virginia, do hereby
5 certify:

6 That the witness whose testimony appears
7 in the foregoing deposition, was duly sworn by me
8 on said date, and that the transcribed deposition
9 of said witness is a true record of the testimony
10 given by said witness;

11 That the proceeding is herein recorded
12 fully and accurately;

13 That I am neither attorney nor counsel
14 for, nor related to any of the parties to the
15 action in which these depositions were taken, and
16 further that I am not a relative of any attorney
17 or counsel employed by the parties hereto, or
18 financially interested in this action.

19 I certify that the attached transcript
20 meets the requirements set forth within article
21 twenty-seven, chapter forty-seven of the West
22 Virginia Code.



24 OFFICIAL SEAL
NOTARY PUBLIC
STATE OF WEST VIRGINIA
Lacey C. Scott
Sargent's Court Reporting Service, Inc.
1234 Suncrest Towne Centre Drive
Morgantown WV 26505
My Commission Expires November 26, 2026

25
Lacey C. Scott,

Court Reporter

Endocrine Treatment of Gender-Dysphoric/ Gender-Incongruent Persons: An Endocrine Society* Clinical Practice Guideline

Wylie C. Hembree,¹ Peggy T. Cohen-Kettenis,² Louis Gooren,³ Sabine E. Hannema,⁴ Walter J. Meyer,⁵ M. Hassan Murad,⁶ Stephen M. Rosenthal,⁷ Joshua D. Safer,⁸ Vin Tangpricha,⁹ and Guy G. T'Sjoen¹⁰

¹New York Presbyterian Hospital, Columbia University Medical Center, New York, New York 10032 (Retired); ²VU University Medical Center, 1007 MB Amsterdam, Netherlands (Retired); ³VU University Medical Center, 1007 MB Amsterdam, Netherlands (Retired); ⁴Leiden University Medical Center, 2300 RC Leiden, Netherlands; ⁵University of Texas Medical Branch, Galveston, Texas 77555; ⁶Mayo Clinic Evidence-Based Practice Center, Rochester, Minnesota 55905; ⁷University of California San Francisco, Benioff Children's Hospital, San Francisco, California 94143; ⁸Boston University School of Medicine, Boston, Massachusetts 02118; ⁹Emory University School of Medicine and the Atlanta VA Medical Center, Atlanta, Georgia 30322; and ¹⁰Ghent University Hospital, 9000 Ghent, Belgium

***Cosponsoring Associations:** American Association of Clinical Endocrinologists, American Society of Andrology, European Society for Pediatric Endocrinology, European Society of Endocrinology, Pediatric Endocrine Society, and World Professional Association for Transgender Health.

Objective: To update the "Endocrine Treatment of Transsexual Persons: An Endocrine Society Clinical Practice Guideline," published by the Endocrine Society in 2009.

Participants: The participants include an Endocrine Society-appointed task force of nine experts, a methodologist, and a medical writer.

Evidence: This evidence-based guideline was developed using the Grading of Recommendations, Assessment, Development, and Evaluation approach to describe the strength of recommendations and the quality of evidence. The task force commissioned two systematic reviews and used the best available evidence from other published systematic reviews and individual studies.

Consensus Process: Group meetings, conference calls, and e-mail communications enabled consensus. Endocrine Society committees, members and cosponsoring organizations reviewed and commented on preliminary drafts of the guidelines.

Conclusion: Gender affirmation is multidisciplinary treatment in which endocrinologists play an important role. Gender-dysphoric/gender-incongruent persons seek and/or are referred to endocrinologists to develop the physical characteristics of the affirmed gender. They require a safe and effective hormone regimen that will (1) suppress endogenous sex hormone secretion determined by the person's genetic/gonadal sex and (2) maintain sex hormone levels within the normal range for the person's affirmed gender. Hormone treatment is not recommended for prepubertal gender-dysphoric/gender-incongruent persons. Those clinicians who recommend gender-affirming endocrine treatments—appropriately trained diagnosing clinicians (required), a mental health provider for adolescents (required) and mental health

professional for adults (recommended)—should be knowledgeable about the diagnostic criteria and criteria for gender-affirming treatment, have sufficient training and experience in assessing psychopathology, and be willing to participate in the ongoing care throughout the endocrine transition. We recommend treating gender-dysphoric/gender-incongruent adolescents who have entered puberty at Tanner Stage G2/B2 by suppression with gonadotropin-releasing hormone agonists. Clinicians may add gender-affirming hormones after a multidisciplinary team has confirmed the persistence of gender dysphoria/gender incongruence and sufficient mental capacity to give informed consent to this partially irreversible treatment. Most adolescents have this capacity by age 16 years old. We recognize that there may be compelling reasons to initiate sex hormone treatment prior to age 16 years, although there is minimal published experience treating prior to 13.5 to 14 years of age. For the care of peripubertal youths and older adolescents, we recommend that an expert multidisciplinary team comprised of medical professionals and mental health professionals manage this treatment. The treating physician must confirm the criteria for treatment used by the referring mental health practitioner and collaborate with them in decisions about gender-affirming surgery in older adolescents. For adult gender-dysphoric/gender-incongruent persons, the treating clinicians (collectively) should have expertise in transgender-specific diagnostic criteria, mental health, primary care, hormone treatment, and surgery, as needed by the patient. We suggest maintaining physiologic levels of gender-appropriate hormones and monitoring for known risks and complications. When high doses of sex steroids are required to suppress endogenous sex steroids and/or in advanced age, clinicians may consider surgically removing natal gonads along with reducing sex steroid treatment. Clinicians should monitor both transgender males (female to male) and transgender females (male to female) for reproductive organ cancer risk when surgical removal is incomplete. Additionally, clinicians should persistently monitor adverse effects of sex steroids. For gender-affirming surgeries in adults, the treating physician must collaborate with and confirm the criteria for treatment used by the referring physician. Clinicians should avoid harming individuals (via hormone treatment) who have conditions other than gender dysphoria/gender incongruence and who may not benefit from the physical changes associated with this treatment. (*J Clin Endocrinol Metab* 102: 3869–3903, 2017)

Summary of Recommendations

1.0 Evaluation of youth and adults

- 1.1. We advise that only trained mental health professionals (MHPs) who meet the following criteria should diagnose gender dysphoria (GD)/gender incongruence in adults: (1) competence in using the Diagnostic and Statistical Manual of Mental Disorders (DSM) and/or the International Statistical Classification of Diseases and Related Health Problems (ICD) for diagnostic purposes, (2) the ability to diagnose GD/gender incongruence and make a distinction between GD/gender incongruence and conditions that have similar features (*e.g.*, body dysmorphic disorder), (3) training in diagnosing psychiatric conditions, (4) the ability to undertake or refer for appropriate treatment, (5) the ability to psychosocially assess the person's understanding, mental health, and social conditions that can impact gender-affirming hormone therapy, and (6) a practice of regularly attending relevant professional meetings. (Ungraded Good Practice Statement)

- 1.2. We advise that only MHPs who meet the following criteria should diagnose GD/gender incongruence in children and adolescents: (1) training in child and adolescent developmental psychology and psychopathology, (2) competence in using the DSM and/or the ICD for diagnostic purposes, (3) the ability to make a distinction between GD/gender incongruence and conditions that have similar features (*e.g.*, body dysmorphic disorder), (4) training in diagnosing psychiatric conditions, (5) the ability to undertake or refer for appropriate treatment, (6) the ability to psychosocially assess the person's understanding and social conditions that can impact gender-affirming hormone therapy, (7) a practice of regularly attending relevant professional meetings, and (8) knowledge of the criteria for puberty blocking and gender-affirming hormone treatment in adolescents. (Ungraded Good Practice Statement)
- 1.3. We advise that decisions regarding the social transition of prepubertal youths with GD/gender incongruence are made with the assistance of an MHP or another experienced professional. (Ungraded Good Practice Statement).

- 1.4. We recommend against puberty blocking and gender-affirming hormone treatment in pre-pubertal children with GD/gender incongruence. (1 ⊕⊕○○)
- 1.5. We recommend that clinicians inform and counsel all individuals seeking gender-affirming medical treatment regarding options for fertility preservation prior to initiating puberty suppression in adolescents and prior to treating with hormonal therapy of the affirmed gender in both adolescents and adults. (1 ⊕⊕⊕○)

2.0 Treatment of adolescents

- 2.1. We suggest that adolescents who meet diagnostic criteria for GD/gender incongruence, fulfill criteria for treatment, and are requesting treatment should initially undergo treatment to suppress pubertal development. (2 ⊕⊕○○)
- 2.2. We suggest that clinicians begin pubertal hormone suppression after girls and boys first exhibit physical changes of puberty. (2 ⊕⊕○○)
- 2.3. We recommend that, where indicated, GnRH analogues are used to suppress pubertal hormones. (1 ⊕⊕○○)
- 2.4. In adolescents who request sex hormone treatment (given this is a partly irreversible treatment), we recommend initiating treatment using a gradually increasing dose schedule after a multidisciplinary team of medical and MHPs has confirmed the persistence of GD/gender incongruence and sufficient mental capacity to give informed consent, which most adolescents have by age 16 years. (1 ⊕⊕○○).
- 2.5. We recognize that there may be compelling reasons to initiate sex hormone treatment prior to the age of 16 years in some adolescents with GD/gender incongruence, even though there are minimal published studies of gender-affirming hormone treatments administered before age 13.5 to 14 years. As with the care of adolescents ≥16 years of age, we recommend that an expert multidisciplinary team of medical and MHPs manage this treatment. (1 ⊕○○○)
- 2.6. We suggest monitoring clinical pubertal development every 3 to 6 months and laboratory parameters every 6 to 12 months during sex hormone treatment. (2 ⊕⊕○○)

3.0 Hormonal therapy for transgender adults

- 3.1. We recommend that clinicians confirm the diagnostic criteria of GD/gender incongruence and

- the criteria for the endocrine phase of gender transition before beginning treatment. (1 ⊕⊕⊕○)
- 3.2. We recommend that clinicians evaluate and address medical conditions that can be exacerbated by hormone depletion and treatment with sex hormones of the affirmed gender before beginning treatment. (1 ⊕⊕⊕○)
- 3.3. We suggest that clinicians measure hormone levels during treatment to ensure that endogenous sex steroids are suppressed and administered sex steroids are maintained in the normal physiologic range for the affirmed gender. (2 ⊕⊕○○)
- 3.4. We suggest that endocrinologists provide education to transgender individuals undergoing treatment about the onset and time course of physical changes induced by sex hormone treatment. (2 ⊕○○○)

4.0 Adverse outcome prevention and long-term care

- 4.1. We suggest regular clinical evaluation for physical changes and potential adverse changes in response to sex steroid hormones and laboratory monitoring of sex steroid hormone levels every 3 months during the first year of hormone therapy for transgender males and females and then once or twice yearly. (2 ⊕⊕○○)
- 4.2. We suggest periodically monitoring prolactin levels in transgender females treated with estrogens. (2 ⊕⊕○○)
- 4.3. We suggest that clinicians evaluate transgender persons treated with hormones for cardiovascular risk factors using fasting lipid profiles, diabetes screening, and/or other diagnostic tools. (2 ⊕⊕○○)
- 4.4. We recommend that clinicians obtain bone mineral density (BMD) measurements when risk factors for osteoporosis exist, specifically in those who stop sex hormone therapy after gonadectomy. (1 ⊕⊕○○)
- 4.5. We suggest that transgender females with no known increased risk of breast cancer follow breast-screening guidelines recommended for non-transgender females. (2 ⊕⊕○○)
- 4.6. We suggest that transgender females treated with estrogens follow individualized screening according to personal risk for prostatic disease and prostate cancer. (2 ⊕○○○)
- 4.7. We advise that clinicians determine the medical necessity of including a total hysterectomy and oophorectomy as part of gender-affirming surgery. (Ungraded Good Practice Statement)

5.0 Surgery for sex reassignment and gender confirmation

- 5.1. We recommend that a patient pursue genital gender-affirming surgery only after the MHP and the clinician responsible for endocrine transition therapy both agree that surgery is medically necessary and would benefit the patient's overall health and/or well-being. (1 ⊕⊕○○)
- 5.2. We advise that clinicians approve genital gender-affirming surgery only after completion of at least 1 year of consistent and compliant hormone treatment, unless hormone therapy is not desired or medically contraindicated. (Ungraded Good Practice Statement)
- 5.3. We advise that the clinician responsible for endocrine treatment and the primary care provider ensure appropriate medical clearance of transgender individuals for genital gender-affirming surgery and collaborate with the surgeon regarding hormone use during and after surgery. (Ungraded Good Practice Statement)
- 5.4. We recommend that clinicians refer hormone-treated transgender individuals for genital surgery when: (1) the individual has had a satisfactory social role change, (2) the individual is satisfied about the hormonal effects, and (3) the individual desires definitive surgical changes. (1 ⊕○○○)
- 5.5. We suggest that clinicians delay gender-affirming genital surgery involving gonadectomy and/or hysterectomy until the patient is at least 18 years old or legal age of majority in his or her country. (2 ⊕⊕○○)
- 5.6. We suggest that clinicians determine the timing of breast surgery for transgender males based upon the physical and mental health status of the individual. There is insufficient evidence to recommend a specific age requirement. (2 ⊕○○○)

Changes Since the Previous Guideline

Both the current guideline and the one published in 2009 contain similar sections. Listed here are the sections contained in the current guideline and the corresponding number of recommendations: Introduction, Evaluation of Youth and Adults (5), Treatment of Adolescents (6), Hormonal Therapy for Transgender Adults (4), Adverse Outcomes Prevention and Long-term Care (7), and Surgery for Sex Reassignment and Gender Confirmation (6). The current introduction updates the diagnostic classification of “gender dysphoria/gender incongruence.” It also reviews the development of “gender identity” and summarizes its natural development. The section on

clinical evaluation of both youth and adults, defines in detail the professional qualifications required of those who diagnose and treat both adolescents and adults. We advise that decisions regarding the social transition of prepubertal youth are made with the assistance of a mental health professional or similarly experienced professional. We recommend against puberty blocking followed by gender-affirming hormone treatment of prepubertal children. Clinicians should inform pubertal children, adolescents, and adults seeking gender-confirming treatment of their options for fertility preservation. Prior to treatment, clinicians should evaluate the presence of medical conditions that may be worsened by hormone depletion and/or treatment. A multidisciplinary team, preferably composed of medical and mental health professionals, should monitor treatments. Clinicians evaluating transgender adults for endocrine treatment should confirm the diagnosis of persistent gender dysphoria/gender incongruence. Physicians should educate transgender persons regarding the time course of steroid-induced physical changes. Treatment should include periodic monitoring of hormone levels and metabolic parameters, as well as assessments of bone density and the impact upon prostate, gonads, and uterus. We also make recommendations for transgender persons who plan genital gender-affirming surgery.

Method of Development of Evidence-Based Clinical Practice Guidelines

The Clinical Guidelines Subcommittee (CGS) of the Endocrine Society deemed the diagnosis and treatment of individuals with GD/gender incongruence a priority area for revision and appointed a task force to formulate evidence-based recommendations. The task force followed the approach recommended by the Grading of Recommendations, Assessment, Development, and Evaluation group, an international group with expertise in the development and implementation of evidence-based guidelines (1). A detailed description of the grading scheme has been published elsewhere (2). The task force used the best available research evidence to develop the recommendations. The task force also used consistent language and graphical descriptions of both the strength of a recommendation and the quality of evidence. In terms of the strength of the recommendation, strong recommendations use the phrase “we recommend” and the number 1, and weak recommendations use the phrase “we suggest” and the number 2. Cross-filled circles indicate the quality of the evidence, such that ⊕○○○ denotes very low-quality evidence; ⊕⊕○○, low quality; ⊕⊕⊕○, moderate quality; and ⊕⊕⊕⊕, high quality. The task force has confidence that persons who receive care according to the strong recommendations will derive, on average, more benefit than harm. Weak recommendations require more careful consideration of the person's circumstances, values, and preferences to determine the best course of action. Linked to each recommendation is a description of the evidence and the

values that the task force considered in making the recommendation. In some instances, there are remarks in which the task force offers technical suggestions for testing conditions, dosing, and monitoring. These technical comments reflect the best available evidence applied to a typical person being treated. Often this evidence comes from the unsystematic observations of the task force and their preferences; therefore, one should consider these remarks as suggestions.

In this guideline, the task force made several statements to emphasize the importance of shared decision-making, general preventive care measures, and basic principles of the treatment of transgender persons. They labeled these “Ungraded Good Practice Statement.” Direct evidence for these statements was either unavailable or not systematically appraised and considered out of the scope of this guideline. The intention of these statements is to draw attention to these principles.

The Endocrine Society maintains a rigorous conflict-of-interest review process for developing clinical practice guidelines. All task force members must declare any potential conflicts of interest by completing a conflict-of-interest form. The CGS reviews all conflicts of interest before the Society’s Council approves the members to participate on the task force and periodically during the development of the guideline. All others participating in the guideline’s development must also disclose any conflicts of interest in the matter under study, and most of these participants must be without any conflicts of interest. The CGS and the task force have reviewed all disclosures for this guideline and resolved or managed all identified conflicts of interest.

Conflicts of interest are defined as remuneration in any amount from commercial interests; grants; research support; consulting fees; salary; ownership interests [e.g., stocks and stock options (excluding diversified mutual funds)]; honoraria and other payments for participation in speakers’ bureaus, advisory boards, or boards of directors; and all other financial benefits. Completed forms are available through the Endocrine Society office.

The Endocrine Society provided the funding for this guideline; the task force received no funding or remuneration from commercial or other entities.

Commissioned Systematic Review

The task force commissioned two systematic reviews to support this guideline. The first one aimed to summarize the available evidence on the effect of sex steroid use in transgender individuals on lipids and cardiovascular outcomes. The review identified 29 eligible studies at moderate risk of bias. In transgender males (female to male), sex steroid therapy was associated with a statistically significant increase in serum triglycerides and low-density lipoprotein cholesterol levels. High-density lipoprotein cholesterol levels decreased significantly across all follow-up time periods. In transgender females (male to female), serum triglycerides were significantly higher without any changes in other parameters. Few myocardial infarction, stroke, venous thromboembolism (VTE), and death events were reported. These events were more frequent in transgender females. However, the

quality of the evidence was low. The second review summarized the available evidence regarding the effect of sex steroids on bone health in transgender individuals and identified 13 studies. In transgender males, there was no statistically significant difference in the lumbar spine, femoral neck, or total hip BMD at 12 and 24 months compared with baseline values before initiating masculinizing hormone therapy. In transgender females, there was a statistically significant increase in lumbar spine BMD at 12 months and 24 months compared with baseline values before initiation of feminizing hormone therapy. There was minimal information on fracture rates. The quality of evidence was also low.

Introduction

Throughout recorded history (in the absence of an endocrine disorder) some men and women have experienced confusion and anguish resulting from rigid, forced conformity to sexual dimorphism. In modern history, there have been numerous ongoing biological, psychological, cultural, political, and sociological debates over various aspects of gender variance. The 20th century marked the emergence of a social awakening for men and women with the belief that they are “trapped” in the wrong body (3). Magnus Hirschfeld and Harry Benjamin, among others, pioneered the medical responses to those who sought relief from and a resolution to their profound discomfort. Although the term transsexual became widely known after Benjamin wrote “The Transsexual Phenomenon” (4), it was Hirschfeld who coined the term “transsexual” in 1923 to describe people who want to live a life that corresponds with their experienced gender vs their designated gender (5). Magnus Hirschfeld (6) and others (4, 7) have described other types of trans phenomena besides transsexualism. These early researchers proposed that the gender identity of these people was located somewhere along a unidimensional continuum. This continuum ranged from all male through “something in between” to all female. Yet such a classification does not take into account that people may have gender identities outside this continuum. For instance, some experience themselves as having both a male and female gender identity, whereas others completely renounce any gender classification (8, 9). There are also reports of individuals experiencing a continuous and rapid involuntary alternation between a male and female identity (10) or men who do not experience themselves as men but do not want to live as women (11, 12). In some countries, (e.g., Nepal, Bangladesh, and Australia), these nonmale or nonfemale genders are officially recognized (13). Specific treatment protocols, however, have not yet been developed for these groups.

Instead of the term transsexualism, the current classification system of the American Psychiatric Association uses the term gender dysphoria in its diagnosis of persons who are not satisfied with their designated gender (14). The current version of the World Health Organization's ICD-10 still uses the term transsexualism when diagnosing adolescents and adults. However, for the ICD-11, the World Health Organization has proposed using the term "gender incongruence" (15).

Treating persons with GD/gender incongruence (15) was previously limited to relatively ineffective elixirs or creams. However, more effective endocrinology-based treatments became possible with the availability of testosterone in 1935 and diethylstilbestrol in 1938. Reports of individuals with GD/gender incongruence who were treated with hormones and gender-affirming surgery appeared in the press during the second half of the 20th century. The Harry Benjamin International Gender Dysphoria Association was founded in September 1979 and is now called the World Professional Association for Transgender Health (WPATH). WPATH published its first Standards of Care in 1979. These standards have since been regularly updated, providing guidance for treating persons with GD/gender incongruence (16).

Prior to 1975, few peer-reviewed articles were published concerning endocrine treatment of transgender persons. Since then, more than two thousand articles about various aspects of transgender care have appeared.

It is the purpose of this guideline to make detailed recommendations and suggestions, based on existing medical literature and clinical experience, that will enable treating physicians to maximize benefit and minimize risk when caring for individuals diagnosed with GD/gender incongruence.

In the future, we need more rigorous evaluations of the effectiveness and safety of endocrine and surgical protocols. Specifically, endocrine treatment protocols for GD/gender incongruence should include the careful assessment of the following: (1) the effects of prolonged delay of puberty in adolescents on bone health, gonadal function, and the brain (including effects on cognitive, emotional, social, and sexual development); (2) the effects of treatment in adults on sex hormone levels; (3) the requirement for and the effects of progestins and other agents used to suppress endogenous sex steroids during treatment; and (4) the risks and benefits of gender-affirming hormone treatment in older transgender people.

To successfully establish and enact these protocols, a commitment of mental health and endocrine investigators is required to collaborate in long-term, large-scale

studies across countries that use the same diagnostic and inclusion criteria, medications, assay methods, and response assessment tools (*e.g.*, the European Network for the Investigation of Gender Incongruence) (17, 18).

Terminology and its use vary and continue to evolve. Table 1 contains the definitions of terms as they are used throughout this guideline.

Biological Determinants of Gender Identity Development

One's self-awareness as male or female changes gradually during infant life and childhood. This process of cognitive and affective learning evolves with interactions with parents, peers, and environment. A fairly accurate timetable exists outlining the steps in this process (19). Normative psychological literature, however, does not address if and when gender identity becomes crystallized and what factors contribute to the development of a gender identity that is not congruent with the gender of rearing. Results of studies from a variety of biomedical disciplines—genetic, endocrine, and neuroanatomic—support the concept that gender identity and/or gender expression (20) likely reflect a complex interplay of biological, environmental, and cultural factors (21, 22).

With respect to endocrine considerations, studies have failed to find differences in circulating levels of sex steroids between transgender and nontransgender individuals (23). However, studies in individuals with a disorder/difference of sex development (DSD) have informed our understanding of the role that hormones may play in gender identity outcome, even though most persons with GD/gender incongruence do not have a DSD. For example, although most 46,XX adult individuals with virilizing congenital adrenal hyperplasia caused by mutations in *CYP21A2* reported a female gender identity, the prevalence of GD/gender incongruence was much greater in this group than in the general population without a DSD. This supports the concept that there is a role for prenatal/postnatal androgens in gender development (24–26), although some studies indicate that prenatal androgens are more likely to affect gender behavior and sexual orientation rather than gender identity *per se* (27, 28).

Researchers have made similar observations regarding the potential role of androgens in the development of gender identity in other individuals with DSD. For example, a review of two groups of 46,XY persons, each with androgen synthesis deficiencies and female raised, reported transgender male (female-to-male) gender role changes in 56% to 63% and 39% to 64% of patients, respectively (29). Also, in 46,XY female-raised individuals with cloacal

Table 1. Definitions of Terms Used in This Guideline

| | |
|---|--|
| <i>Biological sex, biological male or female:</i> | These terms refer to physical aspects of maleness and femaleness. As these may not be in line with each other (e.g., a person with XY chromosomes may have female-appearing genitalia), the terms biological sex and biological male or female are imprecise and should be avoided. |
| <i>Cisgender:</i> | This means not transgender. An alternative way to describe individuals who are not transgender is “non-transgender people.” |
| <i>Gender-affirming (hormone) treatment:</i> | See “gender reassignment” |
| <i>Gender dysphoria:</i> | This is the distress and unease experienced if gender identity and designated gender are not completely congruent (see Table 2). In 2013, the American Psychiatric Association released the fifth edition of the DSM-5, which replaced “gender identity disorder” with “gender dysphoria” and changed the criteria for diagnosis. |
| <i>Gender expression:</i> | This refers to external manifestations of gender, expressed through one’s name, pronouns, clothing, haircut, behavior, voice, or body characteristics. Typically, transgender people seek to make their gender expression align with their gender identity, rather than their designated gender. |
| <i>Gender identity/experienced gender:</i> | This refers to one’s internal, deeply held sense of gender. For transgender people, their gender identity does not match their sex designated at birth. Most people have a gender identity of man or woman (or boy or girl). For some people, their gender identity does not fit neatly into one of those two choices. Unlike gender expression (see below), gender identity is not visible to others. |
| <i>Gender identity disorder:</i> | This is the term used for GD/gender incongruence in previous versions of DSM (see “gender dysphoria”). The ICD-10 still uses the term for diagnosing child diagnoses, but the upcoming ICD-11 has proposed using “gender incongruence of childhood.” |
| <i>Gender incongruence:</i> | This is an umbrella term used when the gender identity and/or gender expression differs from what is typically associated with the designated gender. Gender incongruence is also the proposed name of the gender identity–related diagnoses in ICD-11. Not all individuals with gender incongruence have gender dysphoria or seek treatment. |
| <i>Gender variance:</i> | See “gender incongruence” |
| <i>Gender reassignment:</i> | This refers to the treatment procedure for those who want to adapt their bodies to the experienced gender by means of hormones and/or surgery. This is also called gender-confirming or gender-affirming treatment. |
| <i>Gender-reassignment surgery (gender-confirming/gender-affirming surgery):</i> | These terms refer only to the surgical part of gender-confirming/gender-affirming treatment. |
| <i>Gender role:</i> | This refers to behaviors, attitudes, and personality traits that a society (in a given culture and historical period) designates as masculine or feminine and/or that society associates with or considers typical of the social role of men or women. |
| <i>Sex designated at birth:</i> | This refers to sex assigned at birth, usually based on genital anatomy. |
| <i>Sex:</i> | This refers to attributes that characterize biological maleness or femaleness. The best known attributes include the sex-determining genes, the sex chromosomes, the H-Y antigen, the gonads, sex hormones, internal and external genitalia, and secondary sex characteristics. |
| <i>Sexual orientation:</i> | This term describes an individual’s enduring physical and emotional attraction to another person. Gender identity and sexual orientation are not the same. Irrespective of their gender identity, transgender people may be attracted to women (gynephilic), attracted to men (androphilic), bisexual, asexual, or queer. |
| <i>Transgender:</i> | This is an umbrella term for people whose gender identity and/or gender expression differs from what is typically associated with their sex designated at birth. Not all transgender individuals seek treatment. |
| <i>Transgender male (also: trans man, female-to-male, transgender male):</i> | This refers to individuals assigned female at birth but who identify and live as men. |
| <i>Transgender woman (also: trans woman, male-to-female, transgender female):</i> | This refers to individuals assigned male at birth but who identify and live as women. |
| <i>Transition:</i> | This refers to the process during which transgender persons change their physical, social, and/or legal characteristics consistent with the affirmed gender identity. Prepubertal children may choose to transition socially. |
| <i>Transsexual:</i> | This is an older term that originated in the medical and psychological communities to refer to individuals who have permanently transitioned through medical interventions or desired to do so. |

exstrophy and penile agenesis, the occurrence of transgender male changes was significantly more prevalent than in the general population (30, 31). However, the fact that a high percentage of individuals with the same conditions did not change gender suggests that cultural factors may play a role as well.

With respect to genetics and gender identity, several studies have suggested heritability of GD/gender incongruence (32, 33). In particular, a study by Heylens *et al.* (33) demonstrated a 39.1% concordance rate for gender identity disorder (based on the DSM-IV criteria) in 23 monozygotic twin pairs but no concordance in 21 same-sex dizygotic or seven opposite-sex twin pairs. Although numerous investigators have sought to identify

specific genes associated with GD/gender incongruence, such studies have been inconsistent and without strong statistical significance (34–38).

Studies focusing on brain structure suggest that the brain phenotypes of people with GD/gender incongruence differ in various ways from control males and females, but that there is not a complete sex reversal in brain structures (39).

In summary, although there is much that is still unknown with respect to gender identity and its expression, compelling studies support the concept that biologic factors, in addition to environmental factors, contribute to this fundamental aspect of human development.

Natural History of Children With GD/Gender Incongruence

With current knowledge, we cannot predict the psychosexual outcome for any specific child. Prospective follow-up studies show that childhood GD/gender incongruence does not invariably persist into adolescence and adulthood (so-called “desisters”). Combining all outcome studies to date, the GD/gender incongruence of a minority of prepubertal children appears to persist in adolescence (20, 40). In adolescence, a significant number of these desisters identify as homosexual or bisexual. It may be that children who only showed some gender nonconforming characteristics have been included in the follow-up studies, because the DSM-IV text revision criteria for a diagnosis were rather broad. However, the persistence of GD/gender incongruence into adolescence is more likely if it had been extreme in childhood (41, 42). With the newer, stricter criteria of the DSM-5 (Table 2), persistence rates may well be different in future studies.

1.0 Evaluation of Youth and Adults

Gender-affirming treatment is a multidisciplinary effort. After evaluation, education, and diagnosis, treatment may include mental health care, hormone therapy, and/or surgical therapy. Together with an MHP, hormone-prescribing clinicians should examine the psychosocial impact of the potential changes on people’s lives, including mental health, friends, family, jobs, and their role in society. Transgender individuals should be encouraged to experience living in the new gender role and assess whether

this improves their quality of life. Although the focus of this guideline is gender-affirming hormone therapy, collaboration with appropriate professionals responsible for each aspect of treatment maximizes a successful outcome.

Diagnostic assessment and mental health care

GD/gender incongruence may be accompanied with psychological or psychiatric problems (43–51). It is therefore necessary that clinicians who prescribe hormones and are involved in diagnosis and psychosocial assessment meet the following criteria: (1) are competent in using the DSM and/or the ICD for diagnostic purposes, (2) are able to diagnose GD/gender incongruence and make a distinction between GD/gender incongruence and conditions that have similar features (*e.g.*, body dysmorphic disorder), (3) are trained in diagnosing psychiatric conditions, (4) undertake or refer for appropriate treatment, (5) are able to do a psychosocial assessment of the patient’s understanding, mental health, and social conditions that can impact gender-affirming hormone therapy, and (6) regularly attend relevant professional meetings.

Because of the psychological vulnerability of many individuals with GD/gender incongruence, it is important that mental health care is available before, during, and sometimes also after transitioning. For children and adolescents, an MHP who has training/experience in child and adolescent gender development (as well as child and adolescent psychopathology) should make the diagnosis, because assessing GD/gender incongruence in children and adolescents is often extremely complex.

During assessment, the clinician obtains information from the individual seeking gender-affirming treatment. In the case

Table 2. DSM-5 Criteria for Gender Dysphoria in Adolescents and Adults

- A. A marked incongruence between one’s experienced/expressed gender and natal gender of at least 6 mo in duration, as manifested by at least two of the following:
 1. A marked incongruence between one’s experienced/expressed gender and primary and/or secondary sex characteristics (or in young adolescents, the anticipated secondary sex characteristics)
 2. A strong desire to be rid of one’s primary and/or secondary sex characteristics because of a marked incongruence with one’s experienced/expressed gender (or in young adolescents, a desire to prevent the development of the anticipated secondary sex characteristics)
 3. A strong desire for the primary and/or secondary sex characteristics of the other gender
 4. A strong desire to be of the other gender (or some alternative gender different from one’s designated gender)
 5. A strong desire to be treated as the other gender (or some alternative gender different from one’s designated gender)
 6. A strong conviction that one has the typical feelings and reactions of the other gender (or some alternative gender different from one’s designated gender)
- B. The condition is associated with clinically significant distress or impairment in social, occupational, or other important areas of functioning.

Specify if:

 1. The condition exists with a disorder of sex development.
 2. The condition is posttransitional, in that the individual has transitioned to full-time living in the desired gender (with or without legalization of gender change) and has undergone (or is preparing to have) at least one sex-related medical procedure or treatment regimen—namely, regular sex hormone treatment or gender reassignment surgery confirming the desired gender (*e.g.*, penectomy, vaginoplasty in natal males; mastectomy or phalloplasty in natal females).

of adolescents, the clinician also obtains information from the parents or guardians regarding various aspects of the child's general and psychosexual development and current functioning. On the basis of this information, the clinician:

- decides whether the individual fulfills criteria for treatment (see Tables 2 and 3) for GD/gender incongruence (DSM-5) or transsexualism (DSM-5 and/or ICD-10);
- informs the individual about the possibilities and limitations of various kinds of treatment (hormonal/surgical and nonhormonal), and if medical treatment is desired, provides correct information to prevent unrealistically high expectations;
- assesses whether medical interventions may result in unfavorable psychological and social outcomes.

In cases in which severe psychopathology, circumstances, or both seriously interfere with the diagnostic work or make satisfactory treatment unlikely, clinicians should assist the adolescent in managing these other issues. Literature on postoperative regret suggests that besides poor quality of surgery, severe psychiatric comorbidity and lack of support may interfere with positive outcomes (52–56).

For adolescents, the diagnostic procedure usually includes a complete psychodiagnostic assessment (57) and an assessment of the decision-making capability of the youth. An evaluation to assess the family's ability to endure stress, give support, and deal with the complexities of the adolescent's situation should be part of the diagnostic phase (58).

Social transitioning

A change in gender expression and role (which may involve living part time or full time in another gender role that is consistent with one's gender identity) may test the person's resolve, the capacity to function in the affirmed gender, and the adequacy of social, economic, and psychological supports. It assists both the individual and the clinician in their judgments about how to proceed (16). During social transitioning, the person's feelings about the social transformation (including coping with the responses of others) is a major focus of the counseling. The optimal timing for social transitioning may differ between individuals. Sometimes people wait until they

start gender-affirming hormone treatment to make social transitioning easier, but individuals increasingly start social transitioning long before they receive medically supervised, gender-affirming hormone treatment.

Criteria

Adolescents and adults seeking gender-affirming hormone treatment and surgery should satisfy certain criteria before proceeding (16). Criteria for gender-affirming hormone therapy for adults are in Table 4, and criteria for gender-affirming hormone therapy for adolescents are in Table 5. Follow-up studies in adults meeting these criteria indicate a high satisfaction rate with treatment (59). However, the quality of evidence is usually low. A few follow-up studies on adolescents who fulfilled these criteria also indicated good treatment results (60–63).

Recommendations for Those Involved in the Gender-Affirming Hormone Treatment of Individuals With GD/Gender Incongruence

- 1.1. We advise that only trained MHPs who meet the following criteria should diagnose GD/gender incongruence in adults: (1) competence in using the DSM and/or the ICD for diagnostic purposes, (2) the ability to diagnose GD/gender incongruence and make a distinction between GD/gender incongruence and conditions that have similar features (*e.g.*, body dysmorphic disorder), (3) training in diagnosing psychiatric conditions, (4) the ability to undertake or refer for appropriate treatment, (5) the ability to psychosocially assess the person's understanding, mental health, and social conditions that can impact gender-affirming hormone therapy, and (6) a practice of regularly attending relevant professional meetings. (Ungraded Good Practice Statement)
- 1.2. We advise that only MHPs who meet the following criteria should diagnose GD/gender incongruence in children and adolescents: (1) training in child and adolescent developmental psychology and psychopathology, (2) competence in using the DSM and/or ICD for diagnostic

Table 3. ICD-10 Criteria for Transsexualism

Transsexualism (F64.0) has three criteria:

1. The desire to live and be accepted as a member of the opposite sex, usually accompanied by the wish to make his or her body as congruent as possible with the preferred sex through surgery and hormone treatments.
2. The transsexual identity has been present persistently for at least 2 y.
3. The disorder is not a symptom of another mental disorder or a genetic, DSD, or chromosomal abnormality.

Table 4. Criteria for Gender-Affirming Hormone Therapy for Adults

1. Persistent, well-documented gender dysphoria/gender incongruence
2. The capacity to make a fully informed decision and to consent for treatment
3. The age of majority in a given country (if younger, follow the criteria for adolescents)
4. Mental health concerns, if present, must be reasonably well controlled

Reproduced from World Professional Association for Transgender Health (16).

purposes, (3) the ability to make a distinction between GD/gender incongruence and conditions that have similar features (*e.g.*, body dysmorphic disorder), (4) training in diagnosing psychiatric conditions, (5) the ability to undertake or refer for appropriate treatment, (6) the ability to psychosocially assess the person's understanding and social conditions that can impact gender-affirming hormone therapy, (7) a practice of regularly attending relevant professional meetings, and (8) knowledge of the criteria for puberty blocking and gender-affirming hormone treatment in adolescents. (Ungraded Good Practice Statement)

Evidence

Individuals with gender identity issues may have psychological or psychiatric problems (43–48, 50, 51, 64, 65). It is therefore necessary that clinicians making the diagnosis are able to make a distinction between GD/gender incongruence and conditions that have similar features. Examples of conditions with similar features are body dysmorphic disorder, body identity integrity disorder (a condition in which individuals have a sense that their anatomical configuration as an able-bodied person is somehow wrong or inappropriate) (66), or certain forms of eunuchism (in which a person is preoccupied with or engages in castration and/or penectomy for

Table 5. Criteria for Gender-Affirming Hormone Therapy for Adolescents

Adolescents are eligible for GnRH agonist treatment if:

1. A qualified MHP has confirmed that:
 - the adolescent has demonstrated a long-lasting and intense pattern of gender nonconformity or gender dysphoria (whether suppressed or expressed),
 - gender dysphoria worsened with the onset of puberty,
 - any coexisting psychological, medical, or social problems that could interfere with treatment (*e.g.*, that may compromise treatment adherence) have been addressed, such that the adolescent's situation and functioning are stable enough to start treatment,
 - the adolescent has sufficient mental capacity to give informed consent to this (reversible) treatment,
2. And the adolescent:
 - has been informed of the effects and side effects of treatment (including potential loss of fertility if the individual subsequently continues with sex hormone treatment) and options to preserve fertility,
 - has given informed consent and (particularly when the adolescent has not reached the age of legal medical consent, depending on applicable legislation) the parents or other caretakers or guardians have consented to the treatment and are involved in supporting the adolescent throughout the treatment process,
3. And a pediatric endocrinologist or other clinician experienced in pubertal assessment:
 - agrees with the indication for GnRH agonist treatment,
 - has confirmed that puberty has started in the adolescent (Tanner stage \geq G2/B2),
 - has confirmed that there are no medical contraindications to GnRH agonist treatment.

Adolescents are eligible for subsequent sex hormone treatment if:

1. A qualified MHP has confirmed:
 - the persistence of gender dysphoria,
 - any coexisting psychological, medical, or social problems that could interfere with treatment (*e.g.*, that may compromise treatment adherence) have been addressed, such that the adolescent's situation and functioning are stable enough to start sex hormone treatment,
 - the adolescent has sufficient mental capacity (which most adolescents have by age 16 years) to estimate the consequences of this (partly) irreversible treatment, weigh the benefits and risks, and give informed consent to this (partly) irreversible treatment,
2. And the adolescent:
 - has been informed of the (irreversible) effects and side effects of treatment (including potential loss of fertility and options to preserve fertility),
 - has given informed consent and (particularly when the adolescent has not reached the age of legal medical consent, depending on applicable legislation) the parents or other caretakers or guardians have consented to the treatment and are involved in supporting the adolescent throughout the treatment process,
3. And a pediatric endocrinologist or other clinician experienced in pubertal induction:
 - agrees with the indication for sex hormone treatment,
 - has confirmed that there are no medical contraindications to sex hormone treatment.

Reproduced from World Professional Association for Transgender Health (16).

reasons that are not gender identity related) (11). Clinicians should also be able to diagnose psychiatric conditions accurately and ensure that these conditions are treated appropriately, particularly when the conditions may complicate treatment, affect the outcome of gender-affirming treatment, or be affected by hormone use.

Values and preferences

The task force placed a very high value on avoiding harm from hormone treatment in individuals who have conditions other than GD/gender incongruence and who may not benefit from the physical changes associated with this treatment and placed a low value on any potential benefit these persons believe they may derive from hormone treatment. This justifies the good practice statement.

- 1.3. We advise that decisions regarding the social transition of prepubertal youths with GD/gender incongruence are made with the assistance of an MHP or another experienced professional. (Ungraded Good Practice Statement).
- 1.4. We recommend against puberty blocking and gender-affirming hormone treatment in prepubertal children with GD/gender incongruence. (1 ⊕⊕○○)

Evidence

In most children diagnosed with GD/gender incongruence, it did not persist into adolescence. The percentages differed among studies, probably dependent on which version of the DSM clinicians used, the patient's age, the recruitment criteria, and perhaps cultural factors. However, the large majority (about 85%) of prepubertal children with a childhood diagnosis did not remain GD/gender incongruent in adolescence (20). If children have completely socially transitioned, they may have great difficulty in returning to the original gender role upon entering puberty (40). Social transition is associated with the persistence of GD/gender incongruence as a child progresses into adolescence. It may be that the presence of GD/gender incongruence in prepubertal children is the earliest sign that a child is destined to be transgender as an adolescent/adult (20). However, social transition (in addition to GD/gender incongruence) has been found to contribute to the likelihood of persistence.

This recommendation, however, does not imply that children should be discouraged from showing gender-variant behaviors or should be punished for exhibiting such behaviors. In individual cases, an early complete social transition may result in a more favorable outcome, but there are currently no criteria to identify the

GD/gender-incongruent children to whom this applies. At the present time, clinical experience suggests that persistence of GD/gender incongruence can only be reliably assessed after the first signs of puberty.

Values and preferences

The task force placed a high value on avoiding harm with gender-affirming hormone therapy in prepubertal children with GD/gender incongruence. This justifies the strong recommendation in the face of low-quality evidence.

- 1.5. We recommend that clinicians inform and counsel all individuals seeking gender-affirming medical treatment regarding options for fertility preservation prior to initiating puberty suppression in adolescents and prior to treating with hormonal therapy of the affirmed gender in both adolescents and adults. (1 ⊕⊕⊕○)

Remarks

Persons considering hormone use for gender affirmation need adequate information about this treatment in general and about fertility effects of hormone treatment in particular to make an informed and balanced decision (67, 68). Because young adolescents may not feel qualified to make decisions about fertility and may not fully understand the potential effects of hormonal interventions, consent and protocol education should include parents, the referring MHP(s), and other members of the adolescent's support group. To our knowledge, there are no formally evaluated decision aids available to assist in the discussion and decision regarding the future fertility of adolescents or adults beginning gender-affirming treatment.

Treating early pubertal youth with GnRH analogs will temporarily impair spermatogenesis and oocyte maturation. Given that an increasing number of transgender youth want to preserve fertility potential, delaying or temporarily discontinuing GnRH analogs to promote gamete maturation is an option. This option is often not preferred, because mature sperm production is associated with later stages of puberty and with the significant development of secondary sex characteristics.

For those designated male at birth with GD/gender incongruence and who are in early puberty, sperm production and the development of the reproductive tract are insufficient for the cryopreservation of sperm. However, prolonged pubertal suppression using GnRH analogs is reversible and clinicians should inform these individuals that sperm production can be initiated following prolonged gonadotropin suppression. This can be accomplished by spontaneous gonadotropin recovery after

cessation of GnRH analogs or by gonadotropin treatment and will probably be associated with physical manifestations of testosterone production, as stated above. Note that there are no data in this population concerning the time required for sufficient spermatogenesis to collect enough sperm for later fertility. In males treated for precocious puberty, spermarche was reported 0.7 to 3 years after cessation of GnRH analogs (69). In adult men with gonadotropin deficiency, sperm are noted in seminal fluid by 6 to 12 months of gonadotropin treatment. However, sperm numbers when partners of these patients conceive are far below the “normal range” (70, 71).

In girls, no studies have reported long-term, adverse effects of pubertal suppression on ovarian function after treatment cessation (72, 73). Clinicians should inform adolescents that no data are available regarding either time to spontaneous ovulation after cessation of GnRH analogs or the response to ovulation induction following prolonged gonadotropin suppression.

In males with GD/gender incongruence, when medical treatment is started in a later phase of puberty or in adulthood, spermatogenesis is sufficient for cryopreservation and storage of sperm. *In vitro* spermatogenesis is currently under investigation. Restoration of spermatogenesis after prolonged estrogen treatment has not been studied.

In females with GD/gender incongruence, the effect of prolonged treatment with exogenous testosterone on ovarian function is uncertain. There have been reports of an increased incidence of polycystic ovaries in transgender males, both prior to and as a result of androgen treatment (74–77), although these reports were not confirmed by others (78). Pregnancy has been reported in transgender males who have had prolonged androgen treatment and have discontinued testosterone but have not had genital surgery (79, 80). A reproductive endocrine gynecologist can counsel patients before gender-affirming hormone treatment or surgery regarding potential fertility options (81). Techniques for cryopreservation of oocytes, embryos, and ovarian tissue continue to improve, and oocyte maturation of immature tissue is being studied (82).

2.0 Treatment of Adolescents

During the past decade, clinicians have progressively acknowledged the suffering of young adolescents with GD/gender incongruence. In some forms of GD/gender incongruence, psychological interventions may be useful and sufficient. However, for many adolescents with GD/gender incongruence, the pubertal physical changes are unbearable. As early medical intervention may prevent

psychological harm, various clinics have decided to start treating young adolescents with GD/gender incongruence with puberty-suppressing medication (a GnRH analog). As compared with starting gender-affirming treatment long after the first phases of puberty, a benefit of pubertal suppression at early puberty may be a better psychological and physical outcome.

In girls, the first physical sign of puberty is the budding of the breasts followed by an increase in breast and fat tissue. Breast development is also associated with the pubertal growth spurt, and menarche occurs ~2 years later. In boys, the first physical change is testicular growth. A testicular volume ≥ 4 mL is seen as consistent with the initiation of physical puberty. At the beginning of puberty, estradiol and testosterone levels are still low and are best measured in the early morning with an ultrasensitive assay. From a testicular volume of 10 mL, daytime testosterone levels increase, leading to virilization (83). Note that pubic hair and/or axillary hair/odor may not reflect the onset of gonadarche; instead, it may reflect adrenarche alone.

- 2.1. We suggest that adolescents who meet diagnostic criteria for GD/gender incongruence, fulfill criteria for treatment (Table 5), and are requesting treatment should initially undergo treatment to suppress pubertal development. (2 $\oplus\oplus\oplus\oplus$)
- 2.2. We suggest that clinicians begin pubertal hormone suppression after girls and boys first exhibit physical changes of puberty (Tanner stages G2/B2). (2 $\oplus\oplus\oplus\oplus$)

Evidence

Pubertal suppression can expand the diagnostic phase by a long period, giving the subject more time to explore options and to live in the experienced gender before making a decision to proceed with gender-affirming sex hormone treatments and/or surgery, some of which is irreversible (84, 85). Pubertal suppression is fully reversible, enabling full pubertal development in the natal gender, after cessation of treatment, if appropriate. The experience of full endogenous puberty is an undesirable condition for the GD/gender-incongruent individual and may seriously interfere with healthy psychological functioning and well-being. Treating GD/gender-incongruent adolescents entering puberty with GnRH analogs has been shown to improve psychological functioning in several domains (86).

Another reason to start blocking pubertal hormones early in puberty is that the physical outcome is improved compared with initiating physical transition after puberty has been completed (60, 62). Looking like a man or woman when living as the opposite sex creates difficult

barriers with enormous life-long disadvantages. We therefore advise starting suppression in early puberty to prevent the irreversible development of undesirable secondary sex characteristics. However, adolescents with GD/gender incongruence should experience the first changes of their endogenous spontaneous puberty, because their emotional reaction to these first physical changes has diagnostic value in establishing the persistence of GD/gender incongruence (85). Thus, Tanner stage 2 is the optimal time to start pubertal suppression. However, pubertal suppression treatment in early puberty will limit the growth of the penis and scrotum, which will have a potential effect on future surgical treatments (87).

Clinicians can also use pubertal suppression in adolescents in later pubertal stages to stop menses in transgender males and prevent facial hair growth in transgender females. However, in contrast to the effects in early pubertal adolescents, physical sex characteristics (such as more advanced breast development in transgender boys and lowering of the voice and outgrowth of the jaw and brow in transgender girls) are not reversible.

Values and preferences

These recommendations place a high value on avoiding an unsatisfactory physical outcome when secondary sex characteristics have become manifest and irreversible, a higher value on psychological well-being, and a lower value on avoiding potential harm from early pubertal suppression.

Remarks

Table 6 lists the Tanner stages of breast and male genital development. Careful documentation of hallmarks of pubertal development will ensure precise timing when initiating pubertal suppression once puberty has started. Clinicians can use pubertal LH and sex steroid levels to confirm that puberty has progressed sufficiently before starting pubertal suppression (88). Reference

ranges for sex steroids by Tanner stage may vary depending on the assay used. Ultrasensitive sex steroid and gonadotropin assays will help clinicians document early pubertal changes.

Irreversible and, for GD/gender-incongruent adolescents, undesirable sex characteristics in female puberty are breasts, female body habitus, and, in some cases, relative short stature. In male puberty, they are a prominent Adam's apple; low voice; male bone configuration, such as a large jaw, big feet and hands, and tall stature; and male hair pattern on the face and extremities.

- 2.3. We recommend that, where indicated, GnRH analogues are used to suppress pubertal hormones. (1 ⊕ ⊕ ⊕ ⊕)

Evidence

Clinicians can suppress pubertal development and gonadal function most effectively via gonadotropin suppression using GnRH analogs. GnRH analogs are long-acting agonists that suppress gonadotropins by GnRH receptor desensitization after an initial increase of gonadotropins during ~10 days after the first and (to a lesser degree) the second injection (89). Antagonists immediately suppress pituitary gonadotropin secretion (90, 91). Long-acting GnRH analogs are the currently preferred treatment option. Clinicians may consider long-acting GnRH antagonists when evidence on their safety and efficacy in adolescents becomes available.

During GnRH analog treatment, slight development of secondary sex characteristics may regress, and in a later phase of pubertal development, it will stop. In girls, breast tissue will become atrophic, and menses will stop. In boys, virilization will stop, and testicular volume may decrease (92).

An advantage of using GnRH analogs is the reversibility of the intervention. If, after extensive exploration of his/her transition wish, the individual no longer desires transition, they can discontinue pubertal suppression. In subjects with

Table 6. Tanner Stages of Breast Development and Male External Genitalia

The description of Tanner stages for breast development:

1. Prepubertal
2. Breast and papilla elevated as small mound; areolar diameter increased
3. Breast and areola enlarged, no contour separation
4. Areola and papilla form secondary mound
5. Mature; nipple projects, areola part of general breast contour

For penis and testes:

1. Prepubertal, testicular volume <4 mL
2. Slight enlargement of penis; enlarged scrotum, pink, texture altered, testes 4–6 mL
3. Penis longer, testes larger (8–12 mL)
4. Penis and glans larger, including increase in breadth; testes larger (12–15 mL), scrotum dark
5. Penis adult size; testicular volume > 15 mL

Adapted from Lawrence (56).

precocious puberty, spontaneous pubertal development has been shown to resume after patients discontinue taking GnRH analogs (93).

Recommendations 2.1 to 2.3 are supported by a prospective follow-up study from The Netherlands. This report assessed mental health outcomes in 55 transgender adolescents/young adults (22 transgender females and 33 transgender males) at three time points: (1) before the start of GnRH agonist (average age of 14.8 years at start of treatment), (2) at initiation of gender-affirming hormones (average age of 16.7 years at start of treatment), and (3) 1 year after “gender-reassignment surgery” (average age of 20.7 years) (63). Despite a decrease in depression and an improvement in general mental health functioning, GD/gender incongruence persisted through pubertal suppression, as previously reported (86). However, following sex hormone treatment and gender-reassignment surgery, GD/gender incongruence was resolved and psychological functioning steadily improved (63). Furthermore, well-being was similar to or better than that reported by age-matched young adults from the general population, and none of the study participants regretted treatment. This study represents the first long-term follow-up of individuals managed according to currently existing clinical practice guidelines for transgender youth, and it underscores the benefit of the multidisciplinary approach pioneered in The Netherlands; however, further studies are needed.

Side effects

The primary risks of pubertal suppression in GD/gender-incongruent adolescents may include adverse effects on bone mineralization (which can theoretically be reversed with sex hormone treatment), compromised fertility if the person subsequently is treated with sex hormones, and unknown effects on brain development. Few data are available on the effect of GnRH analogs on BMD in adolescents with GD/gender incongruence. Initial data in GD/gender-incongruent subjects demonstrated no change of absolute areal BMD during 2 years of GnRH analog therapy but a decrease in BMD z scores (85). A recent study also suggested suboptimal bone mineral accrual during GnRH analog treatment. The study reported a decrease in areal BMD z scores and of bone mineral apparent density z scores (which takes the size of the bone into account) in 19 transgender males treated with GnRH analogs from a mean age of 15.0 years (standard deviation = 2.0 years) for a median duration of 1.5 years (0.3 to 5.2 years) and in 15 transgender females treated from 14.9 (± 1.9) years for 1.3 years (0.5 to 3.8 years), although not all changes were statistically significant (94). There was incomplete catch-up at age 22 years after sex hormone treatment from age 16.6 (± 1.4)

years for a median duration of 5.8 years (3.0 to 8.0 years) in transgender females and from age 16.4 (± 2.3) years for 5.4 years (2.8 to 7.8 years) in transgender males. Little is known about more prolonged use of GnRH analogs. Researchers reported normal BMD z scores at age 35 years in one individual who used GnRH analogs from age 13.7 years until age 18.6 years before initiating sex hormone treatment (65).

Additional data are available from individuals with late puberty or GnRH analog treatment of other indications. Some studies reported that men with constitutionally delayed puberty have decreased BMD in adulthood (95). However, other studies reported that these men have normal BMD (96, 97). Treating adults with GnRH analogs results in a decrease of BMD (98). In children with central precocious puberty, treatment with GnRH analogs has been found to result in a decrease of BMD during treatment by some (99) but not others (100). Studies have reported normal BMD after discontinuing therapy (69, 72, 73, 101, 102). In adolescents treated with growth hormone who are small for gestational age and have normal pubertal timing, 2-year GnRH analog treatments did not adversely affect BMD (103). Calcium supplementation may be beneficial in optimizing bone health in GnRH analog-treated individuals (104). There are no studies of vitamin D supplementation in this context, but clinicians should offer supplements to vitamin D-deficient adolescents. Physical activity, especially during growth, is important for bone mass in healthy individuals (103) and is therefore likely to be beneficial for bone health in GnRH analog-treated subjects.

GnRH analogs did not induce a change in body mass index standard deviation score in GD/gender-incongruent adolescents (94) but caused an increase in fat mass and decrease in lean body mass percentage (92). Studies in girls treated for precocious puberty also reported a stable body mass index standard deviation score during treatment (72) and body mass index and body composition comparable to controls after treatment (73).

Arterial hypertension has been reported as an adverse effect in a few girls treated with GnRH analogs for precocious/early puberty (105, 106). Blood pressure monitoring before and during treatment is recommended.

Individuals may also experience hot flashes, fatigue, and mood alterations as a consequence of pubertal suppression. There is no consensus on treatment of these side effects in this context.

It is recommended that any use of pubertal blockers (and subsequent use of sex hormones, as detailed below) include a discussion about implications for fertility (see recommendation 1.3). Transgender adolescents may

want to preserve fertility, which may be otherwise compromised if puberty is suppressed at an early stage and the individual completes phenotypic transition with the use of sex hormones.

Limited data are available regarding the effects of GnRH analogs on brain development. A single cross-sectional study demonstrated no compromise of executive function (107), but animal data suggest there may be an effect of GnRH analogs on cognitive function (108).

Values and preferences

Our recommendation of GnRH analogs places a higher value on the superior efficacy, safety, and reversibility of the pubertal hormone suppression achieved (as compared with the alternatives) and a relatively lower value on limiting the cost of therapy. Of the available alternatives, depot and oral progestin preparations are effective. Experience with this treatment dates back prior to the emergence of GnRH analogs for treating precocious puberty in papers from the 1960s and early 1970s (109–112). These compounds are usually safe, but some side effects have been reported (113–115). Only two recent studies involved transgender youth (116, 117). One of these studies described the use of oral lynestrenol monotherapy followed by the addition of testosterone treatment in transgender boys who were at Tanner stage B4 or further at the start of treatment (117). They found lynestrenol safe, but gonadotropins were not fully suppressed. The study reported metrorrhagia in approximately half of the individuals, mainly in the first 6 months. Acne, headache, hot flashes, and fatigue were other frequent side effects. Another progestin that has been studied in the United States is medroxyprogesterone. This agent is not as effective as GnRH analogs in lowering endogenous sex hormones either and may be associated with other side effects (116). Progestin preparations may be an acceptable treatment for persons without access to GnRH analogs or with a needle phobia. If GnRH analog treatment is not available (insurance denial, prohibitive cost, or other reasons), postpubertal, transgender female adolescents may be treated with an antiandrogen that directly suppresses androgen synthesis or action (see adult section).

Remarks

Measurements of gonadotropin and sex steroid levels give precise information about gonadal axis suppression, although there is insufficient evidence for any specific short-term monitoring scheme in children treated with GnRH analogs (88). If the gonadal axis is not completely suppressed—as evidenced by (for example) menses, erections, or progressive hair growth—the interval of GnRH analog treatment can be shortened or the dose increased. During treatment, adolescents should be monitored for negative effects of delaying puberty, including a halted growth spurt and impaired bone mineral accretion. Table 7 illustrates a suggested clinical protocol.

Anthropometric measurements and X-rays of the left hand to monitor bone age are informative for evaluating growth. To assess BMD, clinicians can perform dual-energy X-ray absorptiometry scans.

- 2.4. In adolescents who request sex hormone treatment (given this is a partly irreversible treatment), we recommend initiating treatment using a gradually increasing dose schedule (see Table 8) after a multidisciplinary team of medical and MHPs has confirmed the persistence of GD/gender incongruence and sufficient mental capacity to give informed consent, which most adolescents have by age 16 years (Table 5). (1 ⊕⊕○○)
- 2.5. We recognize that there may be compelling reasons to initiate sex hormone treatment prior to the age of 16 years in some adolescents with GD/gender incongruence, even though there are minimal published studies of gender-affirming hormone treatments administered before age 13.5 to 14 years. As with the care of adolescents ≥16 years of age, we recommend that an expert multidisciplinary team of medical and MHPs manage this treatment. (1 ⊕○○○)
- 2.6. We suggest monitoring clinical pubertal development every 3 to 6 months and laboratory parameters every 6 to 12 months during sex hormone treatment (Table 9). (2 ⊕⊕○○)

Table 7. Baseline and Follow-Up Protocol During Suppression of Puberty

| |
|--|
| Every 3–6 mo |
| Anthropometry: height, weight, sitting height, blood pressure, Tanner stages |
| Every 6–12 mo |
| Laboratory: LH, FSH, E2/T, 25OH vitamin D |
| Every 1–2 y |
| Bone density using DXA |
| Bone age on X-ray of the left hand (if clinically indicated) |

Adapted from Hembree *et al.* (118).

Abbreviations: DXA, dual-energy X-ray absorptiometry; E2, estradiol; FSH, follicle stimulating hormone; LH, luteinizing hormone; T, testosterone;

Table 8. Protocol Induction of Puberty

Induction of female puberty with oral 17β -estradiol, increasing the dose every 6 mo:

5 $\mu\text{g/kg/d}$

10 $\mu\text{g/kg/d}$

15 $\mu\text{g/kg/d}$

20 $\mu\text{g/kg/d}$

Adult dose = 2–6 mg/d

In postpubertal transgender female adolescents, the dose of 17β -estradiol can be increased more rapidly:

1 mg/d for 6 mo

2 mg/d

Induction of female puberty with transdermal 17β -estradiol, increasing the dose every 6 mo (new patch is placed every 3.5 d):

6.25–12.5 $\mu\text{g/24 h}$ (cut 25- μg patch into quarters, then halves)

25 $\mu\text{g/24 h}$

37.5 $\mu\text{g/24 h}$

Adult dose = 50–200 $\mu\text{g/24 h}$

For alternatives once at adult dose, see Table 11.

Adjust maintenance dose to mimic physiological estradiol levels (see Table 15).

Induction of male puberty with testosterone esters increasing the dose every 6 mo (IM or SC):

25 $\text{mg/m}^2/2 \text{ wk}$ (or alternatively, half this dose weekly, or double the dose every 4 wk)

50 $\text{mg/m}^2/2 \text{ wk}$

75 $\text{mg/m}^2/2 \text{ wk}$

100 $\text{mg/m}^2/2 \text{ wk}$

Adult dose = 100–200 mg every 2 wk

In postpubertal transgender male adolescents the dose of testosterone esters can be increased more rapidly:

75 mg/2 wk for 6 mo

125 mg/2 wk

For alternatives once at adult dose, see Table 11.

Adjust maintenance dose to mimic physiological testosterone levels (see Table 14).

Adapted from Hembree et al. (118).

Abbreviations: IM, intramuscularly; SC, subcutaneously.

Evidence

Adolescents develop competence in decision making at their own pace. Ideally, the supervising medical professionals should individually assess this competence, although no objective tools to make such an assessment are currently available.

Many adolescents have achieved a reasonable level of competence by age 15 to 16 years (119), and in many countries 16-year-olds are legally competent with regard to medical decision making (120). However, others believe that although some capacities are generally achieved before age 16 years, other abilities (such as good risk

assessment) do not develop until well after 18 years (121). They suggest that health care procedures should be divided along a matrix of relative risk, so that younger adolescents can be allowed to decide about low-risk procedures, such as most diagnostic tests and common therapies, but not about high-risk procedures, such as most surgical procedures (121).

Currently available data from transgender adolescents support treatment with sex hormones starting at age 16 years (63, 122). However, some patients may incur potential risks by waiting until age 16 years. These include the potential risk to bone health if puberty is suppressed

Table 9. Baseline and Follow-up Protocol During Induction of Puberty

Every 3–6 mo

•Anthropometry: height, weight, sitting height, blood pressure, Tanner stages

Every 6–12 mo

•In transgender males: hemoglobin/hematocrit, lipids, testosterone, 25OH vitamin D

•In transgender females: prolactin, estradiol, 25OH vitamin D

Every 1–2 y

•BMD using DXA

•Bone age on X-ray of the left hand (if clinically indicated)

BMD should be monitored into adulthood (until the age of 25–30 y or until peak bone mass has been reached).

For recommendations on monitoring once pubertal induction has been completed, see Tables 14 and 15.

Adapted from Hembree et al. (118).

Abbreviation: DXA, dual-energy X-ray absorptiometry.

for 6 to 7 years before initiating sex hormones (*e.g.*, if someone reached Tanner stage 2 at age 9-10 years old). Additionally, there may be concerns about inappropriate height and potential harm to mental health (emotional and social isolation) if initiation of secondary sex characteristics must wait until the person has reached 16 years of age. However, only minimal data supporting earlier use of gender-affirming hormones in transgender adolescents currently exist (63). Clearly, long-term studies are needed to determine the optimal age of sex hormone treatment in GD/gender-incongruent adolescents.

The MHP who has followed the adolescent during GnRH analog treatment plays an essential role in assessing whether the adolescent is eligible to start sex hormone therapy and capable of consenting to this treatment (Table 5). Support of the family/environment is essential. Prior to the start of sex hormones, clinicians should discuss the implications for fertility (see recommendation 1.5). Throughout pubertal induction, an MHP and a pediatric endocrinologist (or other clinician competent in the evaluation and induction of pubertal development) should monitor the adolescent. In addition to monitoring therapy, it is also important to pay attention to general adolescent health issues, including healthy life style choices, such as not smoking, contraception, and appropriate vaccinations (*e.g.*, human papillomavirus).

For the induction of puberty, clinicians can use a similar dose scheme for hypogonadal adolescents with GD/gender incongruence as they use in other individuals with hypogonadism, carefully monitoring for desired and undesired effects (Table 8). In transgender female adolescents, transdermal 17 β -estradiol may be an alternative for oral 17 β -estradiol. It is increasingly used for pubertal induction in hypogonadal females. However, the absence of low-dose estrogen patches may be a problem. As a result, individuals may need to cut patches to size themselves to achieve appropriate dosing (123). In transgender male adolescents, clinicians can give testosterone injections intramuscularly or subcutaneously (124, 125).

When puberty is initiated with a gradually increasing schedule of sex steroid doses, the initial levels will not be high enough to suppress endogenous sex steroid secretion. Gonadotropin secretion and endogenous production of testosterone may resume and interfere with the effectiveness of estrogen treatment, in transgender female adolescents (126, 127). Therefore, continuation of GnRH analog treatment is advised until gonadectomy. Given that GD/gender-incongruent adolescents may opt not to have gonadectomy, long-term studies are necessary to examine the potential risks of prolonged GnRH analog treatment. Alternatively, in transgender male adolescents, GnRH analog treatment can be discontinued once an

adult dose of testosterone has been reached and the individual is well virilized. If uterine bleeding occurs, a progestin can be added. However, the combined use of a GnRH analog (for ovarian suppression) and testosterone may enable phenotypic transition with a lower dose of testosterone in comparison with testosterone alone. If there is a wish or need to discontinue GnRH analog treatment in transgender female adolescents, they may be treated with an antiandrogen that directly suppresses androgen synthesis or action (see section 3.0 “Hormonal Therapy for Transgender Adults”).

Values and preferences

The recommendation to initiate pubertal induction only when the individual has sufficient mental capacity (roughly age 16 years) to give informed consent for this partly irreversible treatment places a higher value on the ability of the adolescent to fully understand and oversee the partially irreversible consequences of sex hormone treatment and to give informed consent. It places a lower value on the possible negative effects of delayed puberty. We may not currently have the means to weigh adequately the potential benefits of waiting until around age 16 years to initiate sex hormones vs the potential risks/harm to BMD and the sense of social isolation from having the timing of puberty be so out of sync with peers (128).

Remarks

Before starting sex hormone treatment, effects on fertility and options for fertility preservation should be discussed. Adult height may be a concern in transgender adolescents. In a transgender female adolescent, clinicians may consider higher doses of estrogen or a more rapid tempo of dose escalation during pubertal induction. There are no established treatments yet to augment adult height in a transgender male adolescent with open epiphyses during pubertal induction. It is not uncommon for transgender adolescents to present for clinical services after having completed or nearly completed puberty. In such cases, induction of puberty with sex hormones can be done more rapidly (see Table 8). Additionally, an adult dose of testosterone in transgender male adolescents may suffice to suppress the gonadal axis without the need to use a separate agent. At the appropriate time, the multidisciplinary team should adequately prepare the adolescent for transition to adult care.

3.0 Hormonal Therapy for Transgender Adults

The two major goals of hormonal therapy are (1) to reduce endogenous sex hormone levels, and thus reduce

the secondary sex characteristics of the individual's designated gender, and (2) to replace endogenous sex hormone levels consistent with the individual's gender identity by using the principles of hormone replacement treatment of hypogonadal patients. The timing of these two goals and the age at which to begin treatment with the sex hormones of the chosen gender is codetermined in collaboration with both the person pursuing transition and the health care providers. The treatment team should include a medical provider knowledgeable in transgender hormone therapy, an MHP knowledgeable in GD/gender incongruence and the mental health concerns of transition, and a primary care provider able to provide care appropriate for transgender individuals. The physical changes induced by this sex hormone transition are usually accompanied by an improvement in mental well-being (129, 130).

- 3.1. We recommend that clinicians confirm the diagnostic criteria of GD/gender incongruence and the criteria for the endocrine phase of gender transition before beginning treatment. (1 ⊕⊕⊕⊕)
- 3.2. We recommend that clinicians evaluate and address medical conditions that can be exacerbated by hormone depletion and treatment with sex hormones of the affirmed gender before beginning treatment (Table 10). (1 ⊕⊕⊕⊕)
- 3.3. We suggest that clinicians measure hormone levels during treatment to ensure that endogenous sex steroids are suppressed and administered sex steroids are maintained in the normal physiologic range for the affirmed gender. (2 ⊕⊕⊕⊕)

Evidence

It is the responsibility of the treating clinician to confirm that the person fulfills criteria for treatment. The treating clinician should become familiar with the terms and criteria presented in Tables 1–5 and take a thorough history from the patient in collaboration with the other members of the treatment team. The treating clinician must ensure that the desire for transition is appropriate; the consequences, risks, and benefits of treatment are well understood; and the desire for transition persists. They also need to discuss fertility preservation options (see recommendation 1.3) (67, 68).

Transgender males

Clinical studies have demonstrated the efficacy of several different androgen preparations to induce masculinization in transgender males (Appendix A) (113, 114, 131–134). Regimens to change secondary sex characteristics follow the general principle of hormone replacement treatment of male hypogonadism (135). Clinicians can use either parenteral or transdermal preparations to achieve testosterone values in the normal male range (this is dependent on the specific assay, but is typically 320 to 1000 ng/dL) (Table 11) (136). Sustained supraphysiologic levels of testosterone increase the risk of adverse reactions (see section 4.0 “Adverse Outcome Prevention and Long-Term Care”) and should be avoided.

Similar to androgen therapy in hypogonadal men, testosterone treatment in transgender males results in increased muscle mass and decreased fat mass, increased facial hair and acne, male pattern baldness in those genetically predisposed, and increased sexual desire (137).

Table 10. Medical Risks Associated With Sex Hormone Therapy

Transgender female: estrogen

Very high risk of adverse outcomes:

- Thromboembolic disease

Moderate risk of adverse outcomes:

- Macroprolactinoma
- Breast cancer
- Coronary artery disease
- Cerebrovascular disease
- Cholelithiasis
- Hypertriglyceridemia

Transgender male: testosterone

Very high risk of adverse outcomes:

- Erythrocytosis (hematocrit > 50%)

Moderate risk of adverse outcomes:

- Severe liver dysfunction (transaminases > threefold upper limit of normal)
- Coronary artery disease
- Cerebrovascular disease
- Hypertension
- Breast or uterine cancer

Table 11. Hormone Regimens in Transgender Persons

| | |
|---------------------------------------|---|
| Transgender females ^a | |
| Estrogen | |
| Oral | |
| Estradiol | 2.0–6.0 mg/d |
| Transdermal | |
| Estradiol transdermal patch | 0.025–0.2 mg/d |
| (New patch placed every 3–5 d) | |
| Parenteral | |
| Estradiol valerate or cypionate | 5–30 mg IM every 2 wk 2–10 mg IM every week |
| Anti-androgens | |
| Spironolactone | 100–300 mg/d |
| Cyproterone acetate ^b | 25–50 mg/d |
| GnRH agonist | 3.75 mg SQ (SC) monthly 11.25 mg SQ (SC) 3-monthly |
| Transgender males | |
| Testosterone | |
| Parenteral testosterone | |
| Testosterone enanthate or cypionate | 100–200 mg SQ (IM) every 2 wk or SQ (SC) 50% per week |
| Testosterone undecanoate ^c | 1000 mg every 12 wk |
| Transdermal testosterone | |
| Testosterone gel 1.6% ^d | 50–100 mg/d |
| Testosterone transdermal patch | 2.5–7.5 mg/d |

Abbreviations: IM, intramuscularly; SQ, sequentially; SC, subcutaneously.

^aEstrogens used with or without antiandrogens or GnRH agonist.

^bNot available in the United States.

^cOne thousand milligrams initially followed by an injection at 6 wk then at 12-wk intervals.

^dAvoid cutaneous transfer to other individuals.

In transgender males, testosterone will result in clitoromegaly, temporary or permanent decreased fertility, deepening of the voice, cessation of menses (usually), and a significant increase in body hair, particularly on the face, chest, and abdomen. Cessation of menses may occur within a few months with testosterone treatment alone, although high doses of testosterone may be required. If uterine bleeding continues, clinicians may consider the addition of a progestational agent or endometrial ablation (138). Clinicians may also administer GnRH analogs or depot medroxyprogesterone to stop menses prior to testosterone treatment.

Transgender females

The hormone regimen for transgender females is more complex than the transgender male regimen (Appendix B). Treatment with physiologic doses of estrogen alone is insufficient to suppress testosterone levels into the normal range for females (139). Most published clinical studies report the need for adjunctive therapy to achieve testosterone levels in the female range (21, 113, 114, 132–134, 139, 140).

Multiple adjunctive medications are available, such as progestins with antiandrogen activity and GnRH agonists (141). Spironolactone works by directly blocking androgens during their interaction with the androgen

receptor (114, 133, 142). It may also have estrogenic activity (143). Cyproterone acetate, a progestational compound with antiandrogenic properties (113, 132, 144), is widely used in Europe. 5 α -Reductase inhibitors do not reduce testosterone levels and have adverse effects (145).

Dittrich *et al.* (141) reported that monthly doses of the GnRH agonist goserelin acetate in combination with estrogen were effective in reducing testosterone levels with a low incidence of adverse reactions in 60 transgender females. Leuprolide and transdermal estrogen were as effective as cyproterone and transdermal estrogen in a comparative retrospective study (146).

Patients can take estrogen as oral conjugated estrogens, oral 17 β -estradiol, or transdermal 17 β -estradiol. Among estrogen options, the increased risk of thromboembolic events associated with estrogens in general seems most concerning with ethinyl estradiol specifically (134, 140, 141), which is why we specifically suggest that it not be used in any transgender treatment plan. Data distinguishing among other estrogen options are less well established although there is some thought that oral routes of administration are more thrombogenic due to the “first pass effect” than are transdermal and parenteral routes, and that the risk of thromboembolic events is dose-dependent. Injectable estrogen and sublingual

estrogen may benefit from avoiding the first pass effect, but they can result in more rapid peaks with greater overall periodicity and thus are more difficult to monitor (147, 148). However, there are no data demonstrating that increased periodicity is harmful otherwise.

Clinicians can use serum estradiol levels to monitor oral, transdermal, and intramuscular estradiol. Blood tests cannot monitor conjugated estrogens or synthetic estrogen use. Clinicians should measure serum estradiol and serum testosterone and maintain them at the level for premenopausal females (100 to 200 pg/mL and <50 ng/dL, respectively). The transdermal preparations and injectable estradiol cypionate or valerate preparations may confer an advantage in older transgender females who may be at higher risk for thromboembolic disease (149).

Values

Our recommendation to maintain levels of gender-affirming hormones in the normal adult range places a high value on the avoidance of the long-term complications of pharmacologic doses. Those patients receiving endocrine treatment who have relative contraindications to hormones should have an in-depth discussion with their physician to balance the risks and benefits of therapy.

Remarks

Clinicians should inform all endocrine-treated individuals of all risks and benefits of gender-affirming hormones prior to initiating therapy. Clinicians should strongly encourage tobacco use cessation in transgender females to avoid increased risk of VTE and cardiovascular complications. We strongly discourage the unsupervised use of hormone therapy (150).

Not all individuals with GD/gender incongruence seek treatment as described (e.g., male-to-eunuchs and individuals seeking partial transition). Tailoring current protocols to the individual may be done within the context of accepted safety guidelines using a multidisciplinary approach including mental health. No evidence-based protocols are available for these groups (151). We need prospective studies to better understand treatment options for these persons.

- 3.4. We suggest that endocrinologists provide education to transgender individuals undergoing treatment about the onset and time course of physical changes induced by sex hormone treatment. (2 ⊕○○○)

Evidence

Transgender males

Physical changes that are expected to occur during the first 1 to 6 months of testosterone therapy include

cessation of menses, increased sexual desire, increased facial and body hair, increased oiliness of skin, increased muscle, and redistribution of fat mass. Changes that occur within the first year of testosterone therapy include deepening of the voice (152, 153), clitoromegaly, and male pattern hair loss (in some cases) (114, 144, 154, 155) (Table 12).

Transgender females

Physical changes that may occur in transgender females in the first 3 to 12 months of estrogen and anti-androgen therapy include decreased sexual desire, decreased spontaneous erections, decreased facial and body hair (usually mild), decreased oiliness of skin, increased breast tissue growth, and redistribution of fat mass (114, 139, 149, 154, 155, 161) (Table 13). Breast development is generally maximal at 2 years after initiating hormones (114, 139, 149, 155). Over a long period of time, the prostate gland and testicles will undergo atrophy.

Although the time course of breast development in transgender females has been studied (150), precise information about other changes induced by sex hormones is lacking (141). There is a great deal of variability among individuals, as evidenced during pubertal development. We all know that a major concern for transgender females is breast development. If we work with estrogens, the result will be often not what the transgender female expects.

Alternatively, there are transgender females who report an anecdotal improved breast development, mood, or sexual desire with the use of progestogens. However, there have been no well-designed studies of the role of progestogens in feminizing hormone regimens, so the question is still open.

Our knowledge concerning the natural history and effects of different cross-sex hormone therapies on breast

Table 12. Masculinizing Effects in Transgender Males

| Effect | Onset | Maximum |
|--------------------------------|---------|----------------|
| Skin oiliness/acne | 1–6 mo | 1–2 y |
| Facial/body hair growth | 6–12 mo | 4–5 y |
| Scalp hair loss | 6–12 mo | — ^a |
| Increased muscle mass/strength | 6–12 mo | 2–5 y |
| Fat redistribution | 1–6 mo | 2–5 y |
| Cessation of menses | 1–6 mo | — ^b |
| Clitoral enlargement | 1–6 mo | 1–2 y |
| Vaginal atrophy | 1–6 mo | 1–2 y |
| Deepening of voice | 6–12 mo | 1–2 y |

Estimates represent clinical observations: Toorians *et al.* (149), Assche-man *et al.* (156), Gooren *et al.* (157), Wierckx *et al.* (158).

^aPrevention and treatment as recommended for biological men.

^bMenorrhagia requires diagnosis and treatment by a gynecologist.

Table 13. Feminizing Effects in Transgender Females

| Effect | Onset | Maximum |
|--------------------------------------|----------|-------------------|
| Redistribution of body fat | 3–6 mo | 2–3 y |
| Decrease in muscle mass and strength | 3–6 mo | 1–2 y |
| Softening of skin/decreased oiliness | 3–6 mo | Unknown |
| Decreased sexual desire | 1–3 mo | 3–6 mo |
| Decreased spontaneous erections | 1–3 mo | 3–6 mo |
| Male sexual dysfunction | Variable | Variable |
| Breast growth | 3–6 mo | 2–3 y |
| Decreased testicular volume | 3–6 mo | 2–3 y |
| Decreased sperm production | Unknown | >3 y |
| Decreased terminal hair growth | 6–12 mo | >3 y ^a |
| Scalp hair | Variable | — ^b |
| Voice changes | None | — ^c |

Estimates represent clinical observations: Toorians *et al.* (149), Asscheman *et al.* (156), Gooren *et al.* (157).

^aComplete removal of male sexual hair requires electrolysis or laser treatment or both.

^bFamilial scalp hair loss may occur if estrogens are stopped.

^cTreatment by speech pathologists for voice training is most effective.

development in transgender females is extremely sparse and based on the low quality of evidence. Current evidence does not indicate that progestogens enhance breast development in transgender females, nor does evidence prove the absence of such an effect. This prevents us from drawing any firm conclusion at this moment and demonstrates the need for further research to clarify these important clinical questions (162).

Values and preferences

Transgender persons have very high expectations regarding the physical changes of hormone treatment and are aware that body changes can be enhanced by surgical procedures (*e.g.*, breast, face, and body habitus). Clear expectations for the extent and timing of sex hormone-induced changes may prevent the potential harm and expense of unnecessary procedures.

4.0 Adverse Outcome Prevention and Long-Term Care

Hormone therapy for transgender males and females confers many of the same risks associated with sex hormone replacement therapy in nontransgender persons. The risks arise from and are worsened by inadvertent or intentional use of supraphysiologic doses of sex hormones, as well as use of inadequate doses of sex hormones to maintain normal physiology (131, 139).

- 4.1. We suggest regular clinical evaluation for physical changes and potential adverse changes in response to sex steroid hormones and laboratory monitoring of sex steroid hormone levels every

3 months during the first year of hormone therapy for transgender males and females and then once or twice yearly. (2 ⊕⊕○○)

Evidence

Pretreatment screening and appropriate regular medical monitoring are recommended for both transgender males and females during the endocrine transition and periodically thereafter (26, 155). Clinicians should monitor weight and blood pressure, conduct physical exams, and assess routine health questions, such as tobacco use, symptoms of depression, and risk of adverse events such as deep vein thrombosis/pulmonary embolism and other adverse effects of sex steroids.

Transgender males

Table 14 contains a standard monitoring plan for transgender males on testosterone therapy (154, 159). Key issues include maintaining testosterone levels in the physiologic normal male range and avoiding adverse events resulting from excess testosterone therapy, particularly erythrocytosis, sleep apnea, hypertension, excessive weight gain, salt retention, lipid changes, and excessive or cystic acne (135).

Because oral 17-alkylated testosterone is not recommended, serious hepatic toxicity is not anticipated with parenteral or transdermal testosterone use (163, 164). Past concerns regarding liver toxicity with testosterone have been alleviated with subsequent reports that indicate the risk of serious liver disease is minimal (144, 165, 166).

Transgender females

Table 15 contains a standard monitoring plan for transgender females on estrogens, gonadotropin suppression, or antiandrogens (160). Key issues include avoiding supraphysiologic doses or blood levels of estrogen that may lead to increased risk for thromboembolic disease, liver dysfunction, and hypertension. Clinicians should monitor serum estradiol levels using laboratories participating in external quality control, as measurements of estradiol in blood can be very challenging (167).

VTE may be a serious complication. A study reported a 20-fold increase in venous thromboembolic disease in a large cohort of Dutch transgender subjects (161). This increase may have been associated with the use of the synthetic estrogen, ethinyl estradiol (149). The incidence decreased when clinicians stopped administering ethinyl estradiol (161). Thus, the use of synthetic estrogens and conjugated estrogens is undesirable because of the inability to regulate doses by measuring serum levels and the risk of thromboembolic disease. In a German gender clinic, deep vein thrombosis occurred in 1 of 60 of transgender females treated with a GnRH analog and oral

Table 14. Monitoring of Transgender Persons on Gender-Affirming Hormone Therapy: Transgender Male

1. Evaluate patient every 3 mo in the first year and then one to two times per year to monitor for appropriate signs of virilization and for development of adverse reactions.
2. Measure serum testosterone every 3 mo until levels are in the normal physiologic male range:^a
 - a. For testosterone enanthate/cypionate injections, the testosterone level should be measured midway between injections. The target level is 400–700 ng/dL to 400 ng/dL. Alternatively, measure peak and trough levels to ensure levels remain in the normal male range.
 - b. For parenteral testosterone undecanoate, testosterone should be measured just before the following injection. If the level is <400 ng/dL, adjust dosing interval.
 - c. For transdermal testosterone, the testosterone level can be measured no sooner than after 1 wk of daily application (at least 2 h after application).
3. Measure hematocrit or hemoglobin at baseline and every 3 mo for the first year and then one to two times a year. Monitor weight, blood pressure, and lipids at regular intervals.
4. Screening for osteoporosis should be conducted in those who stop testosterone treatment, are not compliant with hormone therapy, or who develop risks for bone loss.
5. If cervical tissue is present, monitoring as recommended by the American College of Obstetricians and Gynecologists.
6. Ovariectomy can be considered after completion of hormone transition.
7. Conduct sub- and periareolar annual breast examinations if mastectomy performed. If mastectomy is not performed, then consider mammograms as recommended by the American Cancer Society.

^aAdapted from Lapauw *et al.* (154) and Ott *et al.* (159).

estradiol (141). The patient who developed a deep vein thrombosis was found to have a homozygous C677 T mutation in the methylenetetrahydrofolate reductase gene. In an Austrian gender clinic, administering gender-affirming hormones to 162 transgender females and 89 transgender males was not associated with VTE, despite an 8.0% and 5.6% incidence of thrombophilia (159). A more recent multinational study reported only 10 cases of VTE from a cohort of 1073 subjects (168). Thrombophilia screening of transgender persons initiating hormone treatment should be restricted to those with a personal or family history of VTE (159). Monitoring D-dimer levels during treatment is not recommended (169).

- 4.2. We suggest periodically monitoring prolactin levels in transgender females treated with estrogens. (2 ⊕⊕○○)

Evidence

Estrogen therapy can increase the growth of pituitary lactotroph cells. There have been several reports of prolactinomas occurring after long-term, high-dose

estrogen therapy (170–173). Up to 20% of transgender females treated with estrogens may have elevations in prolactin levels associated with enlargement of the pituitary gland (156). In most cases, the serum prolactin levels will return to the normal range with a reduction or discontinuation of the estrogen therapy or discontinuation of cyproterone acetate (157, 174, 175).

The onset and time course of hyperprolactinemia during estrogen treatment are not known. Clinicians should measure prolactin levels at baseline and then at least annually during the transition period and every 2 years thereafter. Given that only a few case studies reported prolactinomas, and prolactinomas were not reported in large cohorts of estrogen-treated persons, the risk is likely to be very low. Because the major presenting findings of microprolactinomas (hypogonadism and sometimes gynecomastia) are not apparent in transgender females, clinicians may perform radiologic examinations of the pituitary in those patients whose prolactin levels persistently increase despite stable or reduced estrogen levels. Some transgender individuals receive psychotropic medications that can increase prolactin levels (174).

Table 15. Monitoring of Transgender Persons on Gender-Affirming Hormone Therapy: Transgender Female

1. Evaluate patient every 3 mo in the first year and then one to two times per year to monitor for appropriate signs of feminization and for development of adverse reactions.
2. Measure serum testosterone and estradiol every 3 mo.
 - a. Serum testosterone levels should be <50 ng/dL.
 - b. Serum estradiol should not exceed the peak physiologic range: 100–200 pg/mL.
3. For individuals on spironolactone, serum electrolytes, particularly potassium, should be monitored every 3 mo in the first year and annually thereafter.
4. Routine cancer screening is recommended, as in nontransgender individuals (all tissues present).
5. Consider BMD testing at baseline (160). In individuals at low risk, screening for osteoporosis should be conducted at age 60 years or in those who are not compliant with hormone therapy.

This table presents strong recommendations and does not include lower level recommendations.

- 4.3. We suggest that clinicians evaluate transgender persons treated with hormones for cardiovascular risk factors using fasting lipid profiles, diabetes screening, and/or other diagnostic tools. (2 ⊕⊕○○)

Evidence

Transgender males

Administering testosterone to transgender males results in a more atherogenic lipid profile with lowered high-density lipoprotein cholesterol and higher triglyceride and low-density lipoprotein cholesterol values (176–179). Studies of the effect of testosterone on insulin sensitivity have mixed results (178, 180). A randomized, open-label uncontrolled safety study of transgender males treated with testosterone undecanoate demonstrated no insulin resistance after 1 year (181, 182). Numerous studies have demonstrated the effects of sex hormone treatment on the cardiovascular system (160, 179, 183, 184). Long-term studies from The Netherlands found no increased risk for cardiovascular mortality (161). Likewise, a meta-analysis of 19 randomized trials in nontransgender males on testosterone replacement showed no increased incidence of cardiovascular events (185). A systematic review of the literature found that data were insufficient (due to very low-quality evidence) to allow a meaningful assessment of patient-important outcomes, such as death, stroke, myocardial infarction, or VTE in transgender males (176). Future research is needed to ascertain the potential harm of hormonal therapies (176). Clinicians should manage cardiovascular risk factors as they emerge according to established guidelines (186).

Transgender females

A prospective study of transgender females found favorable changes in lipid parameters with increased high-density lipoprotein and decreased low-density lipoprotein concentrations (178). However, increased weight, blood pressure, and markers of insulin resistance attenuated these favorable lipid changes. In a meta-analysis, only serum triglycerides were higher at ≥24 months without changes in other parameters (187). The largest cohort of transgender females (mean age 41 years, followed for a mean of 10 years) showed no increase in cardiovascular mortality despite a 32% rate of tobacco use (161).

Thus, there is limited evidence to determine whether estrogen is protective or detrimental on lipid and glucose metabolism in transgender females (176). With aging, there is usually an increase of body weight. Therefore, as with nontransgender individuals, clinicians should

monitor and manage glucose and lipid metabolism and blood pressure regularly according to established guidelines (186).

- 4.4. We recommend that clinicians obtain BMD measurements when risk factors for osteoporosis exist, specifically in those who stop sex hormone therapy after gonadectomy. (1 ⊕⊕○○)

Evidence

Transgender males

Baseline bone mineral measurements in transgender males are generally in the expected range for their pre-treatment gender (188). However, adequate dosing of testosterone is important to maintain bone mass in transgender males (189, 190). In one study (190), serum LH levels were inversely related to BMD, suggesting that low levels of sex hormones were associated with bone loss. Thus, LH levels in the normal range may serve as an indicator of the adequacy of sex steroid administration to preserve bone mass. The protective effect of testosterone may be mediated by peripheral conversion to estradiol, both systemically and locally in the bone.

Transgender females

A baseline study of BMD reported T scores less than −2.5 in 16% of transgender females (191). In aging males, studies suggest that serum estradiol more positively correlates with BMD than does testosterone (192, 193) and is more important for peak bone mass (194). Estrogen preserves BMD in transgender females who continue on estrogen and antiandrogen therapies (188, 190, 191, 195, 196).

Fracture data in transgender males and females are not available. Transgender persons who have undergone gonadectomy may choose not to continue consistent sex steroid treatment after hormonal and surgical sex reassignment, thereby becoming at risk for bone loss. There have been no studies to determine whether clinicians should use the sex assigned at birth or affirmed gender for assessing osteoporosis (e.g., when using the FRAX tool). Although some researchers use the sex assigned at birth (with the assumption that bone mass has usually peaked for transgender people who initiate hormones in early adulthood), this should be assessed on a case-by-case basis until there are more data available. This assumption will be further complicated by the increasing prevalence of transgender people who undergo hormonal transition at a pubertal age or soon after puberty. Sex for comparison within risk assessment tools may be based on the age at which hormones were initiated and the length of exposure to hormones. In some cases, it may be

reasonable to assess risk using both the male and female calculators and using an intermediate value. Because all subjects underwent normal pubertal development, with known effects on bone size, reference values for birth sex were used for all participants (154).

- 4.5. We suggest that transgender females with no known increased risk of breast cancer follow breast-screening guidelines recommended for those designated female at birth. (2 ⊕⊕○○)
- 4.6. We suggest that transgender females treated with estrogens follow individualized screening according to personal risk for prostatic disease and prostate cancer. (2 ⊕○○○)

Evidence

Studies have reported a few cases of breast cancer in transgender females (197–200). A Dutch study of 1800 transgender females followed for a mean of 15 years (range of 1–30 years) found one case of breast cancer. The Women's Health Initiative study reported that females taking conjugated equine estrogen without progesterone for 7 years did not have an increased risk of breast cancer as compared with females taking placebo (137).

In transgender males, a large retrospective study conducted at the U.S. Veterans Affairs medical health system identified seven breast cancers (194). The authors reported that this was not above the expected rate of breast cancers in cisgender females in this cohort. Furthermore, they did report one breast cancer that developed in a transgender male patient after mastectomy, supporting the fact that breast cancer can occur even after mastectomy. Indeed, there have been case reports of breast cancer developing in subareolar tissue in transgender males, which occurred after mastectomy (201, 202).

Women with primary hypogonadism (Turner syndrome) treated with estrogen replacement exhibited a significantly decreased incidence of breast cancer as compared with national standardized incidence ratios (203, 204). These studies suggest that estrogen therapy does not increase the risk of breast cancer in the short term (<20 to 30 years). We need long-term studies to determine the actual risk, as well as the role of screening mammograms. Regular examinations and gynecologic advice should determine monitoring for breast cancer.

Prostate cancer is very rare before the age of 40, especially with androgen deprivation therapy (205). Childhood or pubertal castration results in regression of the prostate and adult castration reverses benign prostate hypertrophy (206). Although van Kesteren *et al.* (207) reported that estrogen therapy does not induce hypertrophy or premalignant changes in the prostates of

transgender females, studies have reported cases of benign prostatic hyperplasia in transgender females treated with estrogens for 20 to 25 years (208, 209). Studies have also reported a few cases of prostate carcinoma in transgender females (210–214).

Transgender females may feel uncomfortable scheduling regular prostate examinations. Gynecologists are not trained to screen for prostate cancer or to monitor prostate growth. Thus, it may be reasonable for transgender females who transitioned after age 20 years to have annual screening digital rectal examinations after age 50 years and prostate-specific antigen tests consistent with U.S. Preventive Services Task Force Guidelines (215).

- 4.7. We advise that clinicians determine the medical necessity of including a total hysterectomy and oophorectomy as part of gender-affirming surgery. (Ungraded Good Practice Statement)

Evidence

Although aromatization of testosterone to estradiol in transgender males has been suggested as a risk factor for endometrial cancer (216), no cases have been reported. When transgender males undergo hysterectomy, the uterus is small and there is endometrial atrophy (217, 218). Studies have reported cases of ovarian cancer (219, 220). Although there is limited evidence for increased risk of reproductive tract cancers in transgender males, health care providers should determine the medical necessity of a laparoscopic total hysterectomy as part of a gender-affirming surgery to prevent reproductive tract cancer (221).

Values

Given the discomfort that transgender males experience accessing gynecologic care, our recommendation for the medical necessity of total hysterectomy and oophorectomy places a high value on eliminating the risks of female reproductive tract disease and cancer and a lower value on avoiding the risks of these surgical procedures (related to the surgery and to the potential undesirable health consequences of oophorectomy) and their associated costs.

Remarks

The sexual orientation and type of sexual practices will determine the need and types of gynecologic care required following transition. Additionally, in certain countries, the approval required to change the sex in a birth certificate for transgender males may be dependent on having a complete hysterectomy. Clinicians should help patients research nonmedical administrative criteria and

provide counseling. If individuals decide not to undergo hysterectomy, screening for cervical cancer is the same as all other females.

5.0 Surgery for Sex Reassignment and Gender Confirmation

For many transgender adults, genital gender-affirming surgery may be the necessary step toward achieving their ultimate goal of living successfully in their desired gender role. The type of surgery falls into two main categories: (1) those that directly affect fertility and (2) those that do not. Those that change fertility (previously called sex reassignment surgery) include genital surgery to remove the penis and gonads in the male and removal of the uterus and gonads in the female. The surgeries that effect fertility are often governed by the legal system of the state or country in which they are performed. Other gender-conforming surgeries that do not directly affect fertility are not so tightly governed.

Gender-affirming surgical techniques have improved markedly during the past 10 years. Reconstructive genital surgery that preserves neurologic sensation is now the standard. The satisfaction rate with surgical reassignment of sex is now very high (187). Additionally, the mental health of the individual seems to be improved by participating in a treatment program that defines a pathway of gender-affirming treatment that includes hormones and surgery (130, 144) (Table 16).

Surgery that affects fertility is irreversible. The World Professional Association for Transgender Health Standards of Care (222) emphasizes that the “threshold of 18 should not be seen as an indication in itself for active intervention.” If the social transition has not been satisfactory, if the person is not satisfied with or is ambivalent about the effects of sex hormone treatment, or if the person is ambivalent about surgery then the individual should not be referred for surgery (223, 224).

Gender-affirming genital surgeries for transgender females that affect fertility include gonadectomy, penectomy, and creation of a neovagina (225, 226). Surgeons often invert the skin of the penis to form the wall of the vagina, and several literatures reviews have

reported on outcomes (227). Sometimes there is inadequate tissue to form a full neovagina, so clinicians have revisited using intestine and found it to be successful (87, 228, 229). Some newer vaginoplasty techniques may involve autologous oral epithelial cells (230, 231).

The scrotum becomes the labia majora. Surgeons use reconstructive surgery to fashion the clitoris and its hood, preserving the neurovascular bundle at the tip of the penis as the neurosensory supply to the clitoris. Some surgeons are also creating a sensate pedicled-spot adding a G spot to the neovagina to increase sensation (232). Most recently, plastic surgeons have developed techniques to fashion labia minora. To further complete the feminization, uterine transplants have been proposed and even attempted (233).

Neovaginal prolapse, rectovaginal fistula, delayed healing, vaginal stenosis, and other complications do sometimes occur (234, 235). Clinicians should strongly remind the transgender person to use their dilators to maintain the depth and width of the vagina throughout the postoperative period. Genital sexual responsivity and other aspects of sexual function are usually preserved following genital gender-affirming surgery (236, 237).

Ancillary surgeries for more feminine or masculine appearance are not within the scope of this guideline. Voice therapy by a speech language pathologist is available to transform speech patterns to the affirmed gender (148). Spontaneous voice deepening occurs during testosterone treatment of transgender males (152, 238). No studies have compared the effectiveness of speech therapy, laryngeal surgery, or combined treatment.

Breast surgery is a good example of gender-confirming surgery that does not affect fertility. In all females, breast size exhibits a very broad spectrum. For transgender females to make the best informed decision, clinicians should delay breast augmentation surgery until the patient has completed at least 2 years of estrogen therapy, because the breasts continue to grow during that time (141, 155).

Another major procedure is the removal of facial and masculine-appearing body hair using either electrolysis or

Table 16. Criteria for Gender-Affirming Surgery, Which Affects Fertility

1. Persistent, well-documented gender dysphoria
2. Legal age of majority in the given country
3. Having continuously and responsibly used gender-affirming hormones for 12 mo (if there is no medical contraindication to receiving such therapy)
4. Successful continuous full-time living in the new gender role for 12 mo
5. If significant medical or mental health concerns are present, they must be well controlled
6. Demonstrable knowledge of all practical aspects of surgery (e.g., cost, required lengths of hospitalizations, likely complications, postsurgical rehabilitation)

laser treatments. Other feminizing surgeries, such as that to feminize the face, are now becoming more popular (239–241).

In transgender males, clinicians usually delay gender-affirming genital surgeries until after a few years of androgen therapy. Those surgeries that affect fertility in this group include oophorectomy, vaginectomy, and complete hysterectomy. Surgeons can safely perform them vaginally with laparoscopy. These are sometimes done in conjunction with the creation of a neopenis. The cosmetic appearance of a neopenis is now very good, but the surgery is multistage and very expensive (242, 243). Radial forearm flap seems to be the most satisfactory procedure (228, 244). Other flaps also exist (245). Surgeons can make neopenile erections possible by reinnervation of the flap and subsequent contraction of the muscle, leading to stiffening of the neopenis (246, 247), but results are inconsistent (248). Surgeons can also stiffen the penis by imbedding some mechanical device (*e.g.*, a rod or some inflatable apparatus) (249, 250). Because of these limitations, the creation of a neopenis has often been less than satisfactory. Recently, penis transplants are being proposed (233).

In fact, most transgender males do not have any external genital surgery because of the lack of access, high cost, and significant potential complications. Some choose a metaoidioplasty that brings forward the clitoris, thereby allowing them to void in a standing position without wetting themselves (251, 252). Surgeons can create the scrotum from the labia majora with good cosmetic effect and can implant testicular prostheses (253).

The most important masculinizing surgery for the transgender male is mastectomy, and it does not affect fertility. Breast size only partially regresses with androgen therapy (155). In adults, discussions about mastectomy usually take place after androgen therapy has started. Because some transgender male adolescents present after significant breast development has occurred, they may also consider mastectomy 2 years after they begin androgen therapy and before age 18 years. Clinicians should individualize treatment based on the physical and mental health status of the individual. There are now newer approaches to mastectomy with better outcomes (254, 255). These often involve chest contouring (256). Mastectomy is often necessary for living comfortably in the new gender (256).

- 5.1. We recommend that a patient pursue genital gender-affirming surgery only after the MHP and the clinician responsible for endocrine transition therapy both agree that surgery is medically

necessary and would benefit the patient's overall health and/or well-being. (1 ⊕⊕○○)

- 5.2. We advise that clinicians approve genital gender-affirming surgery only after completion of at least 1 year of consistent and compliant hormone treatment, unless hormone therapy is not desired or medically contraindicated. (Ungraded Good Practice Statement)
- 5.3. We advise that the clinician responsible for endocrine treatment and the primary care provider ensure appropriate medical clearance of transgender individuals for genital gender-affirming surgery and collaborate with the surgeon regarding hormone use during and after surgery. (Ungraded Good Practice Statement)
- 5.4. We recommend that clinicians refer hormone-treated transgender individuals for genital surgery when: (1) the individual has had a satisfactory social role change, (2) the individual is satisfied about the hormonal effects, and (3) the individual desires definitive surgical changes. (1 ⊕○○○)
- 5.5. We suggest that clinicians delay gender-affirming genital surgery involving gonadectomy and/or hysterectomy until the patient is at least 18 years old or legal age of majority in his or her country. (2 ⊕⊕○○)
- 5.6. We suggest that clinicians determine the timing of breast surgery for transgender males based upon the physical and mental health status of the individual. There is insufficient evidence to recommend a specific age requirement. (2 ⊕○○○)

Evidence

Owing to the lack of controlled studies, incomplete follow-up, and lack of valid assessment measures, evaluating various surgical approaches and techniques is difficult. However, one systematic review including a large numbers of studies reported satisfactory cosmetic and functional results for vaginoplasty/neovagina construction (257). For transgender males, the outcomes are less certain. However, the problems are now better understood (258). Several postoperative studies report significant long-term psychological and psychiatric pathology (259–261). One study showed satisfaction with breasts, genitals, and femininity increased significantly and showed the importance of surgical treatment as a key therapeutic option for transgender females (262). Another analysis demonstrated that, despite the young average age at death following surgery and the relatively larger number of individuals with somatic morbidity, the study does not allow for determination of

causal relationships between, for example, specific types of hormonal or surgical treatment received and somatic morbidity and mortality (263). Reversal surgery in regretful male-to-female transsexuals after sexual reassignment surgery represents a complex, multistage procedure with satisfactory outcomes. Further insight into the characteristics of persons who regret their decision postoperatively would facilitate better future selection of applicants eligible for sexual reassignment surgery. We need more studies with appropriate controls that examine long-term quality of life, psychosocial outcomes, and psychiatric outcomes to determine the long-term benefits of surgical treatment.

When a transgender individual decides to have gender-affirming surgery, both the hormone prescribing clinician and the MHP must certify that the patient satisfies criteria for gender-affirming surgery (Table 16).

There is some concern that estrogen therapy may cause an increased risk for venous thrombosis during or following surgery (176). For this reason, the surgeon and the hormone-prescribing clinician should collaborate in making a decision about the use of hormones before and following surgery. One study suggests that preoperative factors (such as compliance) are less important for patient satisfaction than are the physical postoperative results (56). However, other studies and clinical experience dictate that individuals who do not follow medical instructions and do not work with their physicians toward a common goal do not achieve treatment goals (264) and experience higher rates of postoperative infections and other complications (265, 266). It is also important that the person requesting surgery feels comfortable with the anatomical changes that have occurred during hormone therapy. Dissatisfaction with social and physical outcomes during the hormone transition may be a contraindication to surgery (223).

An endocrinologist or experienced medical provider should monitor transgender individuals after surgery. Those who undergo gonadectomy will require hormone replacement therapy, surveillance, or both to prevent adverse effects of chronic hormone deficiency.

Financial Disclosures of the Task Force*

Wylie C. Hembree (chair)—financial or business/organizational interests: none declared, significant financial interest or leadership position: none declared. **Peggy T. Cohen-Kettenis**—financial or business/organizational interests: none declared, significant financial interest or leadership position: none declared. **Louis Gooren**—financial or business/organizational interests: none declared, significant financial

interest or leadership position: none declared. **Sabine E. Hannema**—financial or business/organizational interests: none declared, significant financial interest or leadership position: Ferring Pharmaceuticals Inc. (lecture/conference), Pfizer (lecture). **Walter J. Meyer**—financial or business/organizational interests: none declared, significant financial interest or leadership position: none declared. **M. Hassan Murad****—financial or business/organizational interests: Mayo Clinic, Evidence-based Practice Center, significant financial interest or leadership position: none declared. **Stephen M. Rosenthal**—financial or business/organizational interests: AbbVie (consultant), National Institutes of Health (grantee), significant financial interest or leadership position: Pediatric Endocrine Society (immediate past president). **Joshua D. Safer, FACP**—financial or business/organizational interests: none declared, significant financial interest or leadership position: none declared. **Vin Tangpricha**—financial or business/organizational interests: Cystic Fibrosis Foundation (grantee), National Institutes of Health (grantee), significant financial interest or leadership position, Elsevier *Journal of Clinical and Translational Endocrinology* (editor). **Guy G. T'Sjoen**—financial or business/organizational interests: none declared, significant financial interest or leadership position: none declared.* Financial, business, and organizational disclosures of the task force cover the year prior to publication. Disclosures prior to this time period are archived.**Evidence-based reviews for this guideline were prepared under contract with the Endocrine Society.

Acknowledgments

Correspondence and Reprint Requests: The Endocrine Society, 2055 L Street NW, Suite 600, Washington, DC 20036. E-mail: publications@endocrine.org; Phone: 202971-3636.

Disclosure Summary: See Financial Disclosures.

Disclaimer: The Endocrine Society's clinical practice guidelines are developed to be of assistance to endocrinologists by providing guidance and recommendations for particular areas of practice. The guidelines should not be considered inclusive of all proper approaches or methods, or exclusive of others. The guidelines cannot guarantee any specific outcome, nor do they establish a standard of care. The guidelines are not intended to dictate the treatment of a particular patient. Treatment decisions must be made based on the independent judgement of healthcare providers and each patient's individual circumstances.

The Endocrine Society makes no warranty, express or implied, regarding the guidelines and specifically excludes any warranties of merchantability and fitness for a particular use or purpose. The Society shall not be liable for direct, indirect,

special, incidental, or consequential damages related to the use of the information contained herein.

References

- Atkins D, Best D, Briss PA, Eccles M, Falck-Ytter Y, Flottorp S, Guyatt GH, Harbour RT, Haugh MC, Henry D, Hill S, Jaeschke R, Leng G, Liberati A, Magrini N, Mason J, Middleton P, Mrukowicz J, O'Connell D, Oxman AD, Phillips B, Schünemann HJ, Edejer T, Varonen H, Vist GE, Williams JW, Jr, Zaza S; GRADE Working Group. Grading quality of evidence and strength of recommendations. *BMJ*. 2004;328(7454):1490.
- Swiglo BA, Murad MH, Schünemann HJ, Kunz R, Vigersky RA, Guyatt GH, Montori VM. A case for clarity, consistency, and helpfulness: state-of-the-art clinical practice guidelines in endocrinology using the grading of recommendations, assessment, development, and evaluation system. *J Clin Endocrinol Metab*. 2008;93(3):666–673.
- Bullough VL. Transsexualism in history. *Arch Sex Behav*. 1975;4(5):561–571.
- Benjamin H. The transsexual phenomenon. *Trans N Y Acad Sci*. 1967;29(4):428–430.
- Meyerowitz J. *How Sex Changed: A History of Transsexuality in the United States*. Cambridge, MA: Harvard University Press; 2002.
- Hirschfeld M. *Was muss das Volk vom Dritten Geschlecht wissen*. Verlag Max Spohr, Leipzig; 1901.
- Fisk NM. Editorial: Gender dysphoria syndrome—the conceptualization that liberalizes indications for total gender re-orientation and implies a broadly based multi-dimensional rehabilitative regimen. *West J Med*. 1974;120(5):386–391.
- Diamond L. Transgender experience and identity. In: Schwartz SJ, Luyckx K, Vignoles VL, eds. *Handbook of Identity Theory and Research*. New York, NY: Springer; 2011:629–647.
- Queen C, Schimmel L, eds. *PoMoSexuals: Challenging Assumptions About Gender and Sexuality*. San Francisco, CA: Cleis Press; 1997.
- Case LK, Ramachandran VS. Alternating gender incongruity: a new neuropsychiatric syndrome providing insight into the dynamic plasticity of brain-sex. *Med Hypotheses*. 2012;78(5):626–631.
- Johnson TW, Wassersug RJ. Gender identity disorder outside the binary: when gender identity disorder-not otherwise specified is not good enough. *Arch Sex Behav*. 2010;39(3):597–598.
- Wibowo E, Wassersug R, Warkentin K, Walker L, Robinson J, Brotto L, Johnson T. Impact of androgen deprivation therapy on sexual function: a response. *Asian J Androl*. 2012;14(5):793–794.
- Pasquosoone V. 7 countries giving transgender people fundamental rights the U.S. still won't. 2014. Available at: <https://mic.com/articles/87149/7-countries-giving-transgender-people-fundamental-rights-the-u-s-still-won-t>. Accessed 26 August 2016.
- American Psychiatric Association. *Diagnostic and Statistical Manual of Mental Disorders*. 5th ed. Arlington, VA: American Psychiatric Association Publishing.
- Drescher J, Cohen-Kettenis P, Winter S. Minding the body: situating gender identity diagnoses in the ICD-11. *Int Rev Psychiatry*. 2012;24(6):568–577.
- World Professional Association for Transgender Health. Standards of care for the health of transsexual, transgender, and gender nonconforming people. Available at: http://www.wpath.org/site_page.cfm?pk_association_webpage_menu=1351&pk_association_webpage=3926. Accessed 1 September 2017.
- Kreukels BP, Haraldsen IR, De Cuypere G, Richter-Appelt H, Gijs L, Cohen-Kettenis PT. A European network for the investigation of gender incongruence: the ENIGI initiative. *Eur Psychiatry*. 2012;27(6):445–450.
- Dekker MJ, Wierckx K, Van Caenegem E, Klaver M, Kreukels BP, Elaut E, Fisher AD, van Trotsenburg MA, Schreiner T, den Heijer M, T'Sjoen G. A European network for the investigation of gender incongruence: endocrine part. *J Sex Med*. 2016;13(6):994–999.
- Ruble DN, Martin CL, Berenbaum SA. Gender development. In: Damon WL, Lerner RM, Eisenberg N, eds. *Handbook of Child Psychology: Social, Emotional, and Personality Development*. Vol. 3. 6th ed. New York, NY: Wiley; 2006:858–931.
- Steensma TD, Kreukels BP, de Vries AL, Cohen-Kettenis PT. Gender identity development in adolescence. *Horm Behav*. 2013;64(2):288–297.
- Rosenthal SM. Approach to the patient: transgender youth: endocrine considerations. *J Clin Endocrinol Metab*. 2014;99(12):4379–4389.
- Saraswat A, Weinand JD, Safer JD. Evidence supporting the biologic nature of gender identity. *Endocr Pract*. 2015;21(2):199–204.
- Gooren L. The biology of human psychosexual differentiation. *Horm Behav*. 2006;50(4):589–601.
- Berenbaum SA, Meyer-Bahlburg HF. Gender development and sexuality in disorders of sex development. *Horm Metab Res*. 2015;47(5):361–366.
- Dessens AB, Slijper FME, Drop SLS. Gender dysphoria and gender change in chromosomal females with congenital adrenal hyperplasia. *Arch Sex Behav*. 2005;34(4):389–397.
- Meyer-Bahlburg HFL, Dolezal C, Baker SW, Ehrhardt AA, New MI. Gender development in women with congenital adrenal hyperplasia as a function of disorder severity. *Arch Sex Behav*. 2006;35(6):667–684.
- Frisén L, Nordenström A, Falhammar H, Filipsson H, Holmdahl G, Janson PO, Thorén M, Hagenfeldt K, Möller A, Nordenskjöld A. Gender role behavior, sexuality, and psychosocial adaptation in women with congenital adrenal hyperplasia due to CYP21A2 deficiency. *J Clin Endocrinol Metab*. 2009;94(9):3432–3439.
- Meyer-Bahlburg HFL, Dolezal C, Baker SW, Carlson AD, Obeid JS, New MI. Prenatal androgenization affects gender-related behavior but not gender identity in 5–12-year-old girls with congenital adrenal hyperplasia. *Arch Sex Behav*. 2004;33(2):97–104.
- Cohen-Kettenis PT. Gender change in 46,XY persons with 5 α -reductase-2 deficiency and 17 β -hydroxysteroid dehydrogenase-3 deficiency. *Arch Sex Behav*. 2005;34(4):399–410.
- Reiner WG, Gearhart JP. Discordant sexual identity in some genetic males with cloacal exstrophy assigned to female sex at birth. *N Engl J Med*. 2004;350(4):333–341.
- Meyer-Bahlburg HFL. Gender identity outcome in female-raised 46,XY persons with penile agenesis, cloacal exstrophy of the bladder, or penile ablation. *Arch Sex Behav*. 2005;34(4):423–438.
- Cooldidge FL, Thede LL, Young SE. The heritability of gender identity disorder in a child and adolescent twin sample. *Behav Genet*. 2002;32(4):251–257.
- Heylens G, De Cuypere G, Zucker KJ, Schelfaut C, Elaut E, Vanden Bossche H, De Baere E, T'Sjoen G. Gender identity disorder in twins: a review of the case report literature. *J Sex Med*. 2012;9(3):751–757.
- Fernández R, Esteva I, Gómez-Gil E, Rumbo T, Almaraz MC, Roda E, Haro-Mora J-J, Guillamón A, Pávaro E. Association study of ER β , AR, and CYP19A1 genes and MtF transsexualism. *J Sex Med*. 2014;11(12):2986–2994.
- Henningsson S, Westberg L, Nilsson S, Lundström B, Ekselius L, Bodlund O, Lindström E, Hellstrand M, Rosmond R, Eriksson E, Landén M. Sex steroid-related genes and male-to-female transsexualism. *Psychoneuroendocrinology*. 2005;30(7):657–664.
- Hare L, Bernard P, Sánchez FJ, Baird PN, Vilain E, Kennedy T, Harley VR. Androgen receptor repeat length polymorphism associated with male-to-female transsexualism. *Biol Psychiatry*. 2009;65(1):93–96.
- Lombardo F, Toselli L, Grassetti D, Paoli D, Masciandaro P, Valentini F, Lenzi A, Gandini L. Hormone and genetic study in

- male to female transsexual patients. *J Endocrinol Invest.* 2013;36(8):550–557.
38. Ujike H, Otani K, Nakatsuka M, Ishii K, Sasaki A, Oishi T, Sato T, Okahisa Y, Matsumoto Y, Namba Y, Kimata Y, Kuroda S. Association study of gender identity disorder and sex hormone-related genes. *Prog Neuropsychopharmacol Biol Psychiatry.* 2009;33(7):1241–1244.
 39. Kreukels BP, Guillamon A. Neuroimaging studies in people with gender incongruence. *Int Rev Psychiatry.* 2016;28(1):120–128.
 40. Steensma TD, Biemond R, de Boer F, Cohen-Kettenis PT. Desisting and persisting gender dysphoria after childhood: a qualitative follow-up study. *Clin Child Psychol Psychiatry.* 2011;16(4):499–516.
 41. Wallien MSC, Cohen-Kettenis PT. Psychosexual outcome of gender-dysphoric children. *J Am Acad Child Adolesc Psychiatry.* 2008;47(12):1413–1423.
 42. Steensma TD, McGuire JK, Kreukels BPC, Beekman AJ, Cohen-Kettenis PT. Factors associated with desistence and persistence of childhood gender dysphoria: a quantitative follow-up study. *J Am Acad Child Adolesc Psychiatry.* 2013;52(6):582–590.
 43. Cohen-Kettenis PT, Owen A, Kaijser VG, Bradley SJ, Zucker KJ. Demographic characteristics, social competence, and behavior problems in children with gender identity disorder: a cross-national, cross-clinic comparative analysis. *J Abnorm Child Psychol.* 2003;31(1):41–53.
 44. Dhejne C, Van Vlerken R, Heylens G, Arcelus J. Mental health and gender dysphoria: a review of the literature. *Int Rev Psychiatry.* 2016;28(1):44–57.
 45. Pasterski V, Gilligan L, Curtis R. Traits of autism spectrum disorders in adults with gender dysphoria. *Arch Sex Behav.* 2014;43(2):387–393.
 46. Spack NP, Edwards-Leeper L, Feldman HA, Leibowitz S, Mandel F, Diamond DA, Vance SR. Children and adolescents with gender identity disorder referred to a pediatric medical center. *Pediatrics.* 2012;129(3):418–425.
 47. Terada S, Matsumoto Y, Sato T, Okabe N, Kishimoto Y, Uchitomi Y. Factors predicting psychiatric co-morbidity in gender-dysphoric adults. *Psychiatry Res.* 2012;200(2-3):469–474.
 48. VanderLaan DP, Leef JH, Wood H, Hughes SK, Zucker KJ. Autism spectrum disorder risk factors and autistic traits in gender dysphoric children. *J Autism Dev Disord.* 2015;45(6):1742–1750.
 49. de Vries ALC, Doreleijers TAH, Steensma TD, Cohen-Kettenis PT. Psychiatric comorbidity in gender dysphoric adolescents. *J Child Psychol Psychiatry.* 2011;52(11):1195–1202.
 50. de Vries ALC, Noens ILJ, Cohen-Kettenis PT, van Berckelaer-Onnes IA, Doreleijers TA. Autism spectrum disorders in gender dysphoric children and adolescents. *J Autism Dev Disord.* 2010;40(8):930–936.
 51. Wallien MSC, Swaab H, Cohen-Kettenis PT. Psychiatric comorbidity among children with gender identity disorder. *J Am Acad Child Adolesc Psychiatry.* 2007;46(10):1307–1314.
 52. Kuiper AJ, Cohen-Kettenis PT. Gender role reversal among postoperative transsexuals. Available at: <https://www.atrria.nl/eazines/web/IJT/97-03/numbers/symposium/ijtc0502.htm>. Accessed 26 August 2016.
 53. Landén M, Wålinder J, Lambert G, Lundström B. Factors predictive of regret in sex reassignment. *Acta Psychiatr Scand.* 1998;97(4):284–289.
 54. Olsson S-E, Möller A. Regret after sex reassignment surgery in a male-to-female transsexual: a long-term follow-up. *Arch Sex Behav.* 2006;35(4):501–506.
 55. Pfäfflin F, Junge A, eds. *Geschlechtsumwandlung: Abhandlungen zur Transsexualität.* Stuttgart, Germany: Schattauer; 1992.
 56. Lawrence AA. Factors associated with satisfaction or regret following male-to-female sex reassignment surgery. *Arch Sex Behav.* 2003;32(4):299–315.
 57. Cohen-Kettenis PT, Pfäfflin F. *Transgenderism and Intersexuality in Childhood and Adolescence: Making Choices.* Thousand Oaks, CA: SAGE Publications; 2003.
 58. Di Ceglie D, Freedman D, McPherson S, Richardson P. Children and adolescents referred to a specialist gender identity development service: clinical features and demographic characteristics. Available at: https://www.researchgate.net/publication/276061306_Children_and_Adolescents_Referred_to_a_Specialist_Gender_Identity_Development_Service_Clinical_Features_and_Demographic_Characteristics. Accessed 20 July 2017.
 59. Gijs L, Brewaeys A. Surgical treatment of gender dysphoria in adults and adolescents: recent developments, effectiveness, and challenges. *Annu Rev Sex Res.* 2007;18:178–224.
 60. Cohen-Kettenis PT, van Goozen SHM. Sex reassignment of adolescent transsexuals: a follow-up study. *J Am Acad Child Adolesc Psychiatry.* 1997;36(2):263–271.
 61. Smith YLS, van Goozen SHM, Cohen-Kettenis PT. Adolescents with gender identity disorder who were accepted or rejected for sex reassignment surgery: a prospective follow-up study. *J Am Acad Child Adolesc Psychiatry.* 2001;40(4):472–481.
 62. Smith YLS, Van Goozen SHM, Kuiper AJ, Cohen-Kettenis PT. Sex reassignment: outcomes and predictors of treatment for adolescent and adult transsexuals. *Psychol Med.* 2005;35(1):89–99.
 63. de Vries ALC, McGuire JK, Steensma TD, Wagenaar ECF, Doreleijers TAH, Cohen-Kettenis PT. Young adult psychological outcome after puberty suppression and gender reassignment. *Pediatrics.* 2014;134(4):696–704.
 64. Cole CM, O'Boyle M, Emory LE, Meyer WJ III. Comorbidity of gender dysphoria and other major psychiatric diagnoses. *Arch Sex Behav.* 1997;26(1):13–26.
 65. Cohen-Kettenis PT, Schagen SEE, Steensma TD, de Vries ALC, Delemarre-van de Waal HA. Puberty suppression in a gender-dysphoric adolescent: a 22-year follow-up. *Arch Sex Behav.* 2011;40(4):843–847.
 66. First MB. Desire for amputation of a limb: paraphilia, psychosis, or a new type of identity disorder. *Psychol Med.* 2005;35(6):919–928.
 67. Wierckx K, Van Caenegem E, Pennings G, Elaut E, Dedeker D, Van de Peer F, Weyers S, De Sutter P, T'Sjoen G. Reproductive wish in transsexual men. *Hum Reprod.* 2012;27(2):483–487.
 68. Wierckx K, Stuyver I, Weyers S, Hamada A, Agarwal A, De Sutter P, T'Sjoen G. Sperm freezing in transsexual women. *Arch Sex Behav.* 2012;41(5):1069–1071.
 69. Bertelloni S, Baroncelli GI, Ferdeghini M, Menchini-Fabris F, Saggese G. Final height, gonadal function and bone mineral density of adolescent males with central precocious puberty after therapy with gonadotropin-releasing hormone analogues. *Eur J Pediatr.* 2000;159(5):369–374.
 70. Büchter D, Behre HM, Kliesch S, Nieschlag E. Pulsatile GnRH or human chorionic gonadotropin/human menopausal gonadotropin as effective treatment for men with hypogonadotropic hypogonadism: a review of 42 cases. *Eur J Endocrinol.* 1998;139(3):298–303.
 71. Liu PY, Turner L, Rushford D, McDonald J, Baker HW, Conway AJ, Handelsman DJ. Efficacy and safety of recombinant human follicle stimulating hormone (Gonal-F) with urinary human chorionic gonadotrophin for induction of spermatogenesis and fertility in gonadotrophin-deficient men. *Hum Reprod.* 1999;14(6):1540–1545.
 72. Pasquino AM, Pucarelli I, Accardo F, Demiraj V, Segni M, Di Nardo R. Long-term observation of 87 girls with idiopathic central precocious puberty treated with gonadotropin-releasing hormone analogs: impact on adult height, body mass index, bone mineral content, and reproductive function. *J Clin Endocrinol Metab.* 2008;93(1):190–195.
 73. Magiakou MA, Manousaki D, Papadaki M, Hadjidakis D, Levidou G, Vakaki M, Papaefstathiou A, Lalioti N, Kanakantzenbein C, Piaditis G, Chrousos GP, Dacou-Voutetakis C. The

- efficacy and safety of gonadotropin-releasing hormone analog treatment in childhood and adolescence: a single center, long-term follow-up study. *J Clin Endocrinol Metab.* 2010;**95**(1):109–117.
74. Baba T, Endo T, Honnma H, Kitajima Y, Hayashi T, Ikeda H, Masumori N, Kamiya H, Moriwaka O, Saito T. Association between polycystic ovary syndrome and female-to-male transsexual. *Hum Reprod.* 2007;**22**(4):1011–1016.
 75. Spinder T, Spijkstra JJ, van den Tweel JG, Burger CW, van Kessel H, Hompes PGA, Gooren LJG. The effects of long term testosterone administration on pulsatile luteinizing hormone secretion and on ovarian histology in eugonadal female to male transsexual subjects. *J Clin Endocrinol Metab.* 1989;**69**(1):151–157.
 76. Baba T, Endo T, Ikeda K, Shimizu A, Honnma H, Ikeda H, Masumori N, Ohmura T, Kiya T, Fujimoto T, Koizumi M, Saito T. Distinctive features of female-to-male transsexualism and prevalence of gender identity disorder in Japan. *J Sex Med.* 2011;**8**(6):1686–1693.
 77. Vujovic S, Popovic S, Sbutega-Milosevic G, Djordjevic M, Gooren L. Transsexualism in Serbia: a twenty-year follow-up study. *J Sex Med.* 2009;**6**(4):1018–1023.
 78. Ikeda K, Baba T, Noguchi H, Nagasawa K, Endo T, Kiya T, Saito T. Excessive androgen exposure in female-to-male transsexual persons of reproductive age induces hyperplasia of the ovarian cortex and stroma but not polycystic ovary morphology. *Hum Reprod.* 2013;**28**(2):453–461.
 79. Trebay G. He's pregnant. You're speechless. New York Times. 22 June 2008.
 80. Light AD, Obedin-Maliver J, Sevelius JM, Kerns JL. Transgender men who experienced pregnancy after female-to-male gender transitioning. *Obstet Gynecol.* 2014;**124**(6):1120–1127.
 81. De Sutter P. Donor inseminations in partners of female-to-male transsexuals: should the question be asked? *Reprod Biomed Online.* 2003;**6**(3):382, author reply 282–283.
 82. De Roo C, Tilleman K, T'Sjoen G, De Sutter P. Fertility options in transgender people. *Int Rev Psychiatry.* 2016;**28**(1):112–119.
 83. Wennink JMB, Delemarre-van de Waal HA, Schoemaker R, Schoemaker H, Schoemaker J. Luteinizing hormone and follicle stimulating hormone secretion patterns in boys throughout puberty measured using highly sensitive immunoradiometric assays. *Clin Endocrinol (Oxf).* 1989;**31**(5):551–564.
 84. Cohen-Kettenis PT, Delemarre-van de Waal HA, Gooren LJG. The treatment of adolescent transsexuals: changing insights. *J Sex Med.* 2008;**5**(8):1892–1897.
 85. Delemarre-van de Waal HA, Cohen-Kettenis PT. Clinical management of gender identity disorder in adolescents: a protocol on psychological and paediatric endocrinology aspects. *Eur J Endocrinol.* 2006;**155**:S131–S137.
 86. de Vries ALC, Steensma TD, Doreleijers TAH, Cohen-Kettenis PT. Puberty suppression in adolescents with gender identity disorder: a prospective follow-up study. *J Sex Med.* 2011;**8**(8):2276–2283.
 87. Bouman MB, van Zeijl MCT, Buncamper ME, Meijerink WJHJ, van Bodegraven AA, Mullender MG. Intestinal vaginoplasty revisited: a review of surgical techniques, complications, and sexual function. *J Sex Med.* 2014;**11**(7):1835–1847.
 88. Carel JC, Eugster EA, Rogol A, Ghizzoni L, Palmert MR, Antoniazzi F, Berenbaum S, Bourguignon JP, Chrousos GP, Coste J, Deal S, de Vries L, Foster C, Heger S, Holland J, Jahnukainen K, Juul A, Kaplowitz P, Lahlou N, Lee MM, Lee P, Merke DP, Neely EK, Oostdijk W, Phillip M, Rosenfield RL, Shulman D, Styne D, Tauber M, Wit JM; ESPE-LWPES GnRH Analogs Consensus Conference Group. Consensus statement on the use of gonadotropin-releasing hormone analogs in children. *Pediatrics.* 2009;**123**(4):e752–e762.
 89. Roth CL, Brendel L, Rückert C, Hartmann K. Antagonistic and agonistic GnRH analogue treatment of precocious puberty: tracking gonadotropin concentrations in urine. *Horm Res.* 2005;**63**(5):257–262.
 90. Roth C. Therapeutic potential of GnRH antagonists in the treatment of precocious puberty. *Expert Opin Investig Drugs.* 2002;**11**(9):1253–1259.
 91. Tuvemo T. Treatment of central precocious puberty. *Expert Opin Investig Drugs.* 2006;**15**(5):495–505.
 92. Schagen SE, Cohen-Kettenis PT, Delemarre-van de Waal HA, Hannema SE. Efficacy and safety of gonadotropin-releasing hormone agonist treatment to suppress puberty in gender dysphoric adolescents. *J Sex Med.* 2016;**13**(7):1125–1132.
 93. Manasco PK, Pescovitz OH, Feuillan PP, Hench KD, Barnes KM, Jones J, Hill SC, Loriaux DL, Cutler GB, Jr. Resumption of puberty after long term luteinizing hormone-releasing hormone agonist treatment of central precocious puberty. *J Clin Endocrinol Metab.* 1988;**67**(2):368–372.
 94. Klink D, Caris M, Heijboer A, van Trotsenburg M, Rotteveel J. Bone mass in young adulthood following gonadotropin-releasing hormone analog treatment and cross-sex hormone treatment in adolescents with gender dysphoria. *J Clin Endocrinol Metab.* 2015;**100**(2):E270–E275.
 95. Finkelstein JS, Klibanski A, Neer RM. A longitudinal evaluation of bone mineral density in adult men with histories of delayed puberty. *J Clin Endocrinol Metab.* 1996;**81**(3):1152–1155.
 96. Bertelloni S, Baroncelli GI, Ferdeghini M, Perri G, Saggese G. Normal volumetric bone mineral density and bone turnover in young men with histories of constitutional delay of puberty. *J Clin Endocrinol Metab.* 1998;**83**(12):4280–4283.
 97. Darelid A, Ohlsson C, Nilsson M, Kindblom JM, Mellström D, Lorentzon M. Catch up in bone acquisition in young adult men with late normal puberty. *J Bone Miner Res.* 2012;**27**(10):2198–2207.
 98. Mittan D, Lee S, Miller E, Perez RC, Basler JW, Bruder JM. Bone loss following hypogonadism in men with prostate cancer treated with GnRH analogs. *J Clin Endocrinol Metab.* 2002;**87**(8):3656–3661.
 99. Saggese G, Bertelloni S, Baroncelli GI, Battini R, Franchi G. Reduction of bone density: an effect of gonadotropin releasing hormone analogue treatment in central precocious puberty. *Eur J Pediatr.* 1993;**152**(9):717–720.
 100. Neely EK, Bachrach LK, Hintz RL, Habiby RL, Slemenda CW, Feeze L, Pescovitz OH. Bone mineral density during treatment of central precocious puberty. *J Pediatr.* 1995;**127**(5):819–822.
 101. Bertelloni S, Baroncelli GI, Sorrentino MC, Perri G, Saggese G. Effect of central precocious puberty and gonadotropin-releasing hormone analogue treatment on peak bone mass and final height in females. *Eur J Pediatr.* 1998;**157**(5):363–367.
 102. Thornton P, Silverman LA, Geffner ME, Neely EK, Gould E, Danoff TM. Review of outcomes after cessation of gonadotropin-releasing hormone agonist treatment of girls with precocious puberty. *Pediatr Endocrinol Rev.* 2014;**11**(3):306–317.
 103. Lem AJ, van der Kaay DC, Hokken-Koelega AC. Bone mineral density and body composition in short children born SGA during growth hormone and gonadotropin releasing hormone analog treatment. *J Clin Endocrinol Metab.* 2013;**98**(1):77–86.
 104. Antoniazzi F, Zamboni G, Bertoldo F, Lauriola S, Mengarda F, Pietrobelli A, Tatò L. Bone mass at final height in precocious puberty after gonadotropin-releasing hormone agonist with and without calcium supplementation. *J Clin Endocrinol Metab.* 2003;**88**(3):1096–1101.
 105. Calcaterra V, Mannarino S, Corana G, Codazzi AC, Mazzola A, Brambilla P, Larizza D. Hypertension during therapy with triptorelin in a girl with precocious puberty. *Indian J Pediatr.* 2013;**80**(10):884–885.
 106. Siomou E, Kosmeri C, Pavlou M, Vlahos AP, Argyropoulou MI, Siamopoulou A. Arterial hypertension during treatment with triptorelin in a child with Williams-Beuren syndrome. *Pediatr Nephrol.* 2014;**29**(9):1633–1636.
 107. Staphorsius AS, Kreukels BPC, Cohen-Kettenis PT, Veltman DJ, Burke SM, Schagen SEE, Wouters FM, Delemarre-van de Waal

- HA, Bakker J. Puberty suppression and executive functioning: an fMRI-study in adolescents with gender dysphoria. *Psychoneuroendocrinology*. 2015;56:190–199.
108. Hough D, Bellingham M, Haraldsen IR, McLaughlin M, Rennie M, Robinson JE, Solbakk AK, Evans NP. Spatial memory is impaired by peripubertal GnRH agonist treatment and testosterone replacement in sheep. *Psychoneuroendocrinology*. 2017; 75:173–182.
 109. Collipp PJ, Kaplan SA, Boyle DC, Plachte F, Kogut MD. Constitutional Isosexual Precocious Puberty. *Am J Dis Child*. 1964; 108:399–405.
 110. Hahn HB, Jr, Hayles AB, Albert A. Medroxyprogesterone and constitutional precocious puberty. *Mayo Clin Proc*. 1964;39: 182–190.
 111. Kaplan SA, Ling SM, Irani NG. Idiopathic isosexual precocity. *Am J Dis Child*. 1968;116(6):591–598.
 112. Schoen EJ. Treatment of idiopathic precocious puberty in boys. *J Clin Endocrinol Metab*. 1966;26(4):363–370.
 113. Gooren L. Hormone treatment of the adult transsexual patient. *Horm Res*. 2005;64(Suppl 2):31–36.
 114. Moore E, Wisniewski A, Dobs A. Endocrine treatment of transsexual people: a review of treatment regimens, outcomes, and adverse effects. *J Clin Endocrinol Metab*. 2003;88(8):3467–3473.
 115. Krueger RB, Hembree W, Hill M. Prescription of medroxyprogesterone acetate to a patient with pedophilia, resulting in Cushing's syndrome and adrenal insufficiency. *Sex Abuse*. 2006; 18(2):227–228.
 116. Lynch MM, Khandheria MM, Meyer WJ. Retrospective study of the management of childhood and adolescent gender identity disorder using medroxyprogesterone acetate. *Int J Transgenderism*. 2015;16:201–208.
 117. Tack LJW, Craen M, Dhondt K, Vanden Bossche H, Laridaen J, Cools M. Consecutive lynestrenol and cross-sex hormone treatment in biological female adolescents with gender dysphoria: a retrospective analysis. *Biol Sex Differ*. 2016;7:14.
 118. Hembree WC, Cohen-Kettenis P, Delemarre-van de Waal HA, Gooren LJ, Meyer WJ 3rd, Spack NP, Tangpricha V, Montori VM; Endocrine Society. Endocrine treatment of transsexual persons: an Endocrine Society clinical practice guideline. *J Clin Endocrinol Metab*. 2009;94(9):3132–3154.
 119. Mann L, Harmoni R, Power C. Adolescent decision-making: the development of competence. *J Adolesc*. 1989;12(3):265–278.
 120. Stultiens L, Goffin T, Borry P, Dierickx K, Nys H. Minors and informed consent: a comparative approach. *Eur J Health Law*. 2007;14(1):21–46.
 121. Arshagouni P. “But I’m an adult now ... sort of”. Adolescent consent in health care decision-making and the adolescent brain. Available at: <http://digitalcommons.law.umaryland.edu/cgi/viewcontent.cgi?article=1124&context=jhclp>. Accessed 25 June 2017.
 122. NHS. Prescribing of cross-sex hormones as part of the gender identity development service for children and adolescents. Available at: <https://www.england.nhs.uk/commissioning/wp-content/uploads/sites/12/2016/08/clinical-com-pol-16046p.pdf>. Accessed 14 June 2017.
 123. Ankarberg-Lindgren C, Kriström B, Norjavaara E. Physiological estrogen replacement therapy for puberty induction in girls: a clinical observational study. *Horm Res Paediatr*. 2014;81(4): 239–244.
 124. Olson J, Schrager SM, Clark LF, Dunlap SL, Belzer M. Subcutaneous testosterone: an effective delivery mechanism for masculinizing young transgender men. *LGBT Health*. 2014;1(3): 165–167.
 125. Spratt DI, Stewart I, Savage C, Craig W, Spack NP, Chandler DW, Spratt LV, Eimicke T, Olshan JS. Subcutaneous injection of testosterone is an effective and preferred alternative to intramuscular injection: demonstration in female-to-male transgender patients. *J Clin Endocrinol Metab*. 2017. doi:10.1210/jc.2017-00359
 126. Eisenegger C, von Eckardstein A, Fehr E, von Eckardstein S. Pharmacokinetics of testosterone and estradiol gel preparations in healthy young men. *Psychoneuroendocrinology*. 2013;38(2): 171–178.
 127. de Ronde W, ten Kulve J, Woerdeman J, Kaufman J-M, de Jong FH. Effects of oestradiol on gonadotrophin levels in normal and castrated men. *Clin Endocrinol (Oxf)*. 2009;71(6):874–879.
 128. Money J, Ehrhardt A. Man & woman, boy & girl: differentiation and dimorphism of gender identity from conception to maturity. Baltimore, MD: Johns Hopkins University Press; 1972:202–206.
 129. Heylens G, Verroken C, De Cock S, T'Sjoen G, De Cuypere G. Effects of different steps in gender reassignment therapy on psychopathology: a prospective study of persons with a gender identity disorder. *J Sex Med*. 2014;11(1):119–126.
 130. Costa R, Colizzi M. The effect of cross-sex hormonal treatment on gender dysphoria individuals' mental health: a systematic review. *Neuropsychiatr Dis Treat*. 2016;12:1953–1966.
 131. Gooren LJG, Giltay EJ. Review of studies of androgen treatment of female-to-male transsexuals: effects and risks of administration of androgens to females. *J Sex Med*. 2008;5(4):765–776.
 132. Levy A, Crown A, Reid R. Endocrine intervention for transsexuals. *Clin Endocrinol (Oxf)*. 2003;59(4):409–418.
 133. Tangpricha V, Ducharme SH, Barber TW, Chipkin SR. Endocrinologic treatment of gender identity disorders. *Endocr Pract*. 2003;9(1):12–21.
 134. Meriggiola MC, Gava G. Endocrine care of transpeople part I. A review of cross-sex hormonal treatments, outcomes and adverse effects in transmen. *Clin Endocrinol (Oxf)*. 2015;83(5):597–606.
 135. Bhasin S, Cunningham GR, Hayes FJ, Matsumoto AM, Snyder PJ, Swerdloff RS, Montori VM. Testosterone therapy in adult men with androgen deficiency syndromes: an endocrine society clinical practice guideline. *J Clin Endocrinol Metab*. 2006;91(6): 1995–2010.
 136. Pelusi C, Costantino A, Martelli V, Lambertini M, Bazzocchi A, Ponti F, Battista G, Venturoli S, Meriggiola MC. Effects of three different testosterone formulations in female-to-male transsexual persons. *J Sex Med*. 2014;11(12):3002–3011.
 137. Anderson GL, Limacher M, Assaf AR, Bassford T, Beresford SA, Black H, Bonds D, Brunner R, Brzyski R, Caan B, Chlebowski R, Curb D, Gass M, Hays J, Heiss G, Hendrix S, Howard BV, Hsia J, Hubbell A, Jackson R, Johnson KC, Judd H, Kotchen JM, Kuller L, LaCroix AZ, Lane D, Langer RD, Lasser N, Lewis CE, Manson J, Margolis K, Ockene J, O'Sullivan MJ, Phillips L, Prentice RL, Ritenbaugh C, Robbins J, Rossouw JE, Sarto G, Stefanick ML, Van Horn L, Wactawski-Wende J, Wallace R, Wassertheil-Smoller S; Women's Health Initiative Steering Committee. Effects of conjugated equine estrogen in postmenopausal women with hysterectomy: the Women's Health Initiative randomized controlled trial. *JAMA*. 2004;291(14):1701–1712.
 138. Dickersin K, Munro MG, Clark M, Langenberg P, Scherer R, Frick K, Zhu Q, Hallock L, Nichols J, Yalcinkaya TM; Surgical Treatments Outcomes Project for Dysfunctional Uterine Bleeding (STOP-DUB) Research Group. Hysterectomy compared with endometrial ablation for dysfunctional uterine bleeding: a randomized controlled trial. *Obstet Gynecol*. 2007;110(6): 1279–1289.
 139. Gooren LJ, Giltay EJ, Bunck MC. Long-term treatment of transsexuals with cross-sex hormones: extensive personal experience. *J Clin Endocrinol Metab*. 2008;93(1):19–25.
 140. Prior JC, Vigna YM, Watson D. Spironolactone with physiological female steroids for presurgical therapy of male-to-female transsexualism. *Arch Sex Behav*. 1989;18(1):49–57.
 141. Dittich R, Binder H, Cupisti S, Hoffmann I, Beckmann MW, Mueller A. Endocrine treatment of male-to-female transsexuals using gonadotropin-releasing hormone agonist. *Exp Clin Endocrinol Diabetes*. 2005;113(10):586–592.

142. Striip B, Taylor AA, Bartter FC, Gillette JR, Loriaux DL, Easley R, Menard RH. Effect of spironolactone on sex hormones in man. *J Clin Endocrinol Metab.* 1975;41(4):777–781.
143. Levy J, Burshell A, Marbach M, Aflalo L, Glick SM. Interaction of spironolactone with oestradiol receptors in cytosol. *J Endocrinol.* 1980;84(3):371–379.
144. Wierckx K, Elaut E, Van Hoorde B, Heylens G, De Cuypere G, Monstrey S, Weyers S, Hoebeke P, T'Sjoen G. Sexual desire in trans persons: associations with sex reassignment treatment. *J Sex Med.* 2014;11(1):107–118.
145. Chiriaco G, Cauci S, Mazzon G, Trombetta C. An observational retrospective evaluation of 79 young men with long-term adverse effects after use of finasteride against androgenetic alopecia. *Andrology.* 2016;4(2):245–250.
146. Gava G, Cerpolini S, Martelli V, Battista G, Seracchioli R, Meriggiola MC. Cyproterone acetate vs leuprolide acetate in combination with transdermal oestradiol in transwomen: a comparison of safety and effectiveness. *Clin Endocrinol (Oxf).* 2016; 85(2):239–246.
147. Casper RF, Yen SS. Rapid absorption of micronized estradiol-17 beta following sublingual administration. *Obstet Gynecol.* 1981; 57(1):62–64.
148. Price TM, Blauer KL, Hansen M, Stanczyk F, Lobo R, Bates GW. Single-dose pharmacokinetics of sublingual versus oral administration of micronized 17 β -estradiol. *Obstet Gynecol.* 1997;89(3): 340–345.
149. Toorians AWFT, Thomassen MCLGD, Zweegman S, Magdeleyns EJP, Tans G, Gooren LJG, Rosing J. Venous thrombosis and changes of hemostatic variables during cross-sex hormone treatment in transsexual people. *J Clin Endocrinol Metab.* 2003;88(12): 5723–5729.
150. Mepham N, Bouman WP, Arcelus J, Hayter M, Wylie KR. People with gender dysphoria who self-prescribe cross-sex hormones: prevalence, sources, and side effects knowledge. *J Sex Med.* 2014; 11(12):2995–3001.
151. Richards C, Bouman WP, Seal L, Barker MJ, Nieder TO, T'Sjoen G. Non-binary or genderqueer genders. *Int Rev Psychiatry.* 2016; 28(1):95–102.
152. Cosyns M, Van Borsel J, Wierckx K, Dedeker D, Van de Peer F, Daelman T, Laenen S, T'Sjoen G. Voice in female-to-male transsexual persons after long-term androgen therapy. *Laryngoscope.* 2014;124(6):1409–1414.
153. Deuster D, Matulat P, Knief A, Zitzmann M, Rosslau K, Szukaj M, am Zehnhoff-Dinnesen A, Schmidt CM. Voice deepening under testosterone treatment in female-to-male gender dysphoric individuals. *Eur Arch Otorhinolaryngol.* 2016;273(4):959–965.
154. Lapauw B, Taes Y, Simoens S, Van Caenegem E, Weyers S, Goemaere S, Toye K, Kaufman J-M, T'Sjoen GG. Body composition, volumetric and areal bone parameters in male-to-female transsexual persons. *Bone.* 2008;43(6):1016–1021.
155. Meyer III WJ, Webb A, Stuart CA, Finkelstein JW, Lawrence B, Walker PA. Physical and hormonal evaluation of transsexual patients: a longitudinal study. *Arch Sex Behav.* 1986;15(2): 121–138.
156. Asscheman H, Gooren LJ, Assies J, Smits JP, de Slegte R. Prolactin levels and pituitary enlargement in hormone-treated male-to-female transsexuals. *Clin Endocrinol (Oxf).* 1988;28(6):583–588.
157. Gooren LJ, Harmsen-Louman W, van Kessel H. Follow-up of prolactin levels in long-term oestrogen-treated male-to-female transsexuals with regard to prolactinoma induction. *Clin Endocrinol (Oxf).* 1985;22(2):201–207.
158. Wierckx K, Van Caenegem E, Schreiner T, Haraldsen I, Fisher AD, Toye K, Kaufman JM, T'Sjoen G. Cross-sex hormone therapy in trans persons is safe and effective at short-time follow-up: results from the European network for the investigation of gender incongruence. *J Sex Med.* 2014;11(8):1999–2011.
159. Ott J, Kaufmann U, Bentz EK, Huber JC, Tempfer CB. Incidence of thrombophilia and venous thrombosis in transsexuals under cross-sex hormone therapy. *Fertil Steril.* 2010;93(4):1267–1272.
160. Giltay EJ, Hoogeveen EK, Elbers JMH, Gooren LJG, Asscheman H, Stehouwer CDA. Effects of sex steroids on plasma total homocysteine levels: a study in transsexual males and females. *J Clin Endocrinol Metab.* 1998;83(2):550–553.
161. van Kesteren PJM, Asscheman H, Megens JAJ, Gooren LJG. Mortality and morbidity in transsexual subjects treated with cross-sex hormones. *Clin Endocrinol (Oxf).* 1997;47(3): 337–343.
162. Wierckx K, Gooren L, T'Sjoen G. Clinical review: breast development in trans women receiving cross-sex hormones. *J Sex Med.* 2014;11(5):1240–1247.
163. Bird D, Vowles K, Anthony PP. Spontaneous rupture of a liver cell adenoma after long term methyltestosterone: report of a case successfully treated by emergency right hepatic lobectomy. *Br J Surg.* 1979;66(3):212–213.
164. Westaby D, Ogle SJ, Paradinas FJ, Randell JB, Murray-Lyon IM. Liver damage from long-term methyltestosterone. *Lancet.* 1977; 2(8032):262–263.
165. Weinand JD, Safer JD. Hormone therapy in transgender adults is safe with provider supervision; a review of hormone therapy sequelae for transgender individuals. *J Clin Transl Endocrinol.* 2015;2(2):55–60.
166. Roberts TK, Kraft CS, French D, Ji W, Wu AH, Tangpricha V, Fantz CR. Interpreting laboratory results in transgender patients on hormone therapy. *Am J Med.* 2014;127(2):159–162.
167. Vesper HW, Botelho JC, Wang Y. Challenges and improvements in testosterone and estradiol testing. *Asian J Androl.* 2014;16(2): 178–184.
168. Asscheman H, T'Sjoen G, Lemaire A, Mas M, Meriggiola MC, Mueller A, Kuhn A, Dhejne C, Morel-Journel N, Gooren LJ. Venous thrombo-embolism as a complication of cross-sex hormone treatment of male-to-female transsexual subjects: a review. *Andrologia.* 2014;46(7):791–795.
169. Righini M, Perrier A, De Moerloose P, Bounameaux H. D-dimer for venous thromboembolism diagnosis: 20 years later. *J Thromb Haemost.* 2008;6(7):1059–1071.
170. Gooren LJ, Assies J, Asscheman H, de Slegte R, van Kessel H. Estrogen-induced prolactinoma in a man. *J Clin Endocrinol Metab.* 1988;66(2):444–446.
171. Kovacs K, Stefaneanu L, Ezzat S, Smyth HS. Prolactin-producing pituitary adenoma in a male-to-female transsexual patient with protracted estrogen administration. A morphologic study. *Arch Pathol Lab Med.* 1994;118(5):562–565.
172. Serri O, Noiseux D, Robert F, Hardy J. Lactotroph hyperplasia in an estrogen treated male-to-female transsexual patient. *J Clin Endocrinol Metab.* 1996;81(9):3177–3179.
173. Cunha FS, Domenice S, Câmara VL, Sircili MH, Gooren LJ, Mendonça BB, Costa EM. Diagnosis of prolactinoma in two male-to-female transsexual subjects following high-dose cross-sex hormone therapy. *Andrologia.* 2015;47(6):680–684.
174. Nota NM, Dekker MJHJ, Klaver M, Wiepjes CM, van Trotsenburg MA, Heijboer AC, den Heijer M. Prolactin levels during short- and long-term cross-sex hormone treatment: an observational study in transgender persons. *Andrologia.* 2017;49(6).
175. Bunck MC, Debono M, Giltay EJ, Verheijen AT, Diamant M, Gooren LJ. Autonomous prolactin secretion in two male-to-female transgender patients using conventional oestrogen dosages. *BMJ Case Rep.* 2009;2009:bcr0220091589.
176. Elamin MB, Garcia MZ, Murad MH, Erwin PJ, Montori VM. Effect of sex steroid use on cardiovascular risk in transsexual individuals: a systematic review and meta-analyses. *Clin Endocrinol (Oxf).* 2010;72(1):1–10.
177. Berra M, Armillotta F, D'Emidio L, Costantino A, Martorana G, Pelusi G, Meriggiola MC. Testosterone decreases adiponectin

- levels in female to male transsexuals. *Asian J Androl.* 2006;8(6):725–729.
178. Elbers JMH, Giltay EJ, Teerlink T, Scheffer PG, Asscheman H, Seidell JC, Gooren LJG. Effects of sex steroids on components of the insulin resistance syndrome in transsexual subjects. *Clin Endocrinol (Oxf).* 2003;58(5):562–571.
 179. Giltay EJ, Lambert J, Gooren LJG, Elbers JMH, Steyn M, Stehouwer CDA. Sex steroids, insulin, and arterial stiffness in women and men. *Hypertension.* 1999;34(4 Pt 1):590–597.
 180. Polderman KH, Gooren LJ, Asscheman H, Bakker A, Heine RJ. Induction of insulin resistance by androgens and estrogens. *J Clin Endocrinol Metab.* 1994;79(1):265–271.
 181. Maraka S. Effect of sex steroids on lipids, venous thromboembolism, cardiovascular disease and mortality in transgender individuals: a systematic review and meta-analysis. Available at: <http://press.endocrine.org/doi/abs/10.1210/endo-meetings.2016.RE.15.FRI-136>. Accessed 3 July 2017.
 182. Meriggiola MC, Armillotta F, Costantino A, Altieri P, Saad F, Kalhorn T, Perrone AM, Ghi T, Pelusi C, Pelusi G. Effects of testosterone undecanoate administered alone or in combination with letrozole or dutasteride in female to male transsexuals. *J Sex Med.* 2008;5(10):2442–2453.
 183. Giltay EJ, Toorians AW, Sarabdjitsingh AR, de Vries NA, Gooren LJ. Established risk factors for coronary heart disease are unrelated to androgen-induced baldness in female-to-male transsexuals. *J Endocrinol.* 2004;180(1):107–112.
 184. Giltay EJ, Verhoeve P, Gooren LJG, Geleijnse JM, Schouten EG, Stehouwer CDA. Oral and transdermal estrogens both lower plasma total homocysteine in male-to-female transsexuals. *Atherosclerosis.* 2003;168(1):139–146.
 185. Calof OM, Singh AB, Lee ML, Kenny AM, Urban RJ, Tenover JL, Bhasin S. Adverse events associated with testosterone replacement in middle-aged and older men: a meta-analysis of randomized, placebo-controlled trials. *J Gerontol A Biol Sci Med Sci.* 2005;60(11):1451–1457.
 186. Expert Panel on Detection, Evaluation, and Treatment of High Blood Cholesterol in Adults. Executive summary of the Third Report of the National Cholesterol Education Program (NCEP) Expert Panel on Detection, Evaluation, and Treatment of High Blood Cholesterol in Adults (Adult Treatment Panel III). *JAMA.* 2001;285(19):2486–2497.
 187. Murad MH, Elamin MB, Garcia MZ, Mullan RJ, Murad A, Erwin PJ, Montori VM. Hormonal therapy and sex reassignment: a systematic review and meta-analysis of quality of life and psychosocial outcomes. *Clin Endocrinol (Oxf).* 2010;72(2):214–231.
 188. Van Caenegem E, Wierckx K, Taes Y, Schreiner T, Vandewalle S, Toye K, Lapauw B, Kaufman JM, T'Sjoen G. Body composition, bone turnover, and bone mass in trans men during testosterone treatment: 1-year follow-up data from a prospective case-controlled study (ENIGI). *Eur J Endocrinol.* 2015;172(2):163–171.
 189. Turner A, Chen TC, Barber TW, Malabanan AO, Holick MF, Tangpricha V. Testosterone increases bone mineral density in female-to-male transsexuals: a case series of 15 subjects. *Clin Endocrinol (Oxf).* 2004;61(5):560–566.
 190. van Kesteren P, Lips P, Gooren LJG, Asscheman H, Megens J. Long-term follow-up of bone mineral density and bone metabolism in transsexuals treated with cross-sex hormones. *Clin Endocrinol (Oxf).* 1998;48(3):347–354.
 191. Van Caenegem E, Taes Y, Wierckx K, Vandewalle S, Toye K, Kaufman JM, Schreiner T, Haraldsen I, T'Sjoen G. Low bone mass is prevalent in male-to-female transsexual persons before the start of cross-sex hormonal therapy and gonadectomy. *Bone.* 2013;54(1):92–97.
 192. Amin S, Zhang Y, Sawin CT, Evans SR, Hannan MT, Kiel DP, Wilson PW, Felson DT. Association of hypogonadism and estradiol levels with bone mineral density in elderly men from the Framingham study. *Ann Intern Med.* 2000;133(12):951–963.
 193. Gennari L, Khosla S, Bilezikian JP. Estrogen and fracture risk in men. *J Bone Miner Res.* 2008;23(10):1548–1551.
 194. Khosla S, Melton LJ III, Atkinson EJ, O'Fallon WM, Klee GG, Riggs BL. Relationship of serum sex steroid levels and bone turnover markers with bone mineral density in men and women: a key role for bioavailable estrogen. *J Clin Endocrinol Metab.* 1998;83(7):2266–2274.
 195. Mueller A, Dittrich R, Binder H, Kuehnel W, Maltaris T, Hoffmann I, Beckmann MW. High dose estrogen treatment increases bone mineral density in male-to-female transsexuals receiving gonadotropin-releasing hormone agonist in the absence of testosterone. *Eur J Endocrinol.* 2005;153(1):107–113.
 196. Ruetsche AG, Kneubuehl R, Birkhaeuser MH, Lippuner K. Cortical and trabecular bone mineral density in transsexuals after long-term cross-sex hormonal treatment: a cross-sectional study. *Osteoporos Int.* 2005;16(7):791–798.
 197. Ganly I, Taylor EW. Breast cancer in a trans-sexual man receiving hormone replacement therapy. *Br J Surg.* 1995;82(3):341.
 198. Pritchard TJ, Pankowsky DA, Crowe JP, Abdul-Karim FW. Breast cancer in a male-to-female transsexual. A case report. *JAMA.* 1988;259(15):2278–2280.
 199. Symmers WS. Carcinoma of breast in trans-sexual individuals after surgical and hormonal interference with the primary and secondary sex characteristics. *BMJ.* 1968;2(5597):83–85.
 200. Brown GR. Breast cancer in transgender veterans: a ten-case series. *LGBT Health.* 2015;2(1):77–80.
 201. Shao T, Grossbard ML, Klein P. Breast cancer in female-to-male transsexuals: two cases with a review of physiology and management. *Clin Breast Cancer.* 2011;11(6):417–419.
 202. Nikolic DV, Djordjevic ML, Granic M, Nikolic AT, Stanimirovic VV, Zdravkovic D, Jelic S. Importance of revealing a rare case of breast cancer in a female to male transsexual after bilateral mastectomy. *World J Surg Oncol.* 2012;10:280.
 203. Bösze P, Tóth A, Török M. Hormone replacement and the risk of breast cancer in Turner's syndrome. *N Engl J Med.* 2006;355(24):2599–2600.
 204. Schoemaker MJ, Swerdlow AJ, Higgins CD, Wright AF, Jacobs PA; UK Clinical Cytogenetics Group. Cancer incidence in women with Turner syndrome in Great Britain: a national cohort study. *Lancet Oncol.* 2008;9(3):239–246.
 205. Smith RA, Cokkinides V, Eyre HJ. American Cancer Society guidelines for the early detection of cancer, 2006. *CA Cancer J Clin.* 2006;56(1):11–25, quiz 49–50.
 206. Wilson JD, Roehrborn C. Long-term consequences of castration in men: lessons from the Skoptzy and the eunuchs of the Chinese and Ottoman courts. *J Clin Endocrinol Metab.* 1999;84(12):4324–4331.
 207. van Kesteren P, Meinhardt W, van der Valk P, Geldof A, Megens J, Gooren L. Effects of estrogens only on the prostates of aging men. *J Urol.* 1996;156(4):1349–1353.
 208. Brown JA, Wilson TM. Benign prostatic hyperplasia requiring transurethral resection of the prostate in a 60-year-old male-to-female transsexual. *Br J Urol.* 1997;80(6):956–957.
 209. Casella R, Bubendorf L, Schaefer DJ, Bachmann A, Gasser TC, Sulser T. Does the prostate really need androgens to grow? Transurethral resection of the prostate in a male-to-female transsexual 25 years after sex-changing operation. *Urol Int.* 2005;75(3):288–290.
 210. Dorff TB, Shazer RL, Nepomuceno EM, Tucker SJ. Successful treatment of metastatic androgen-independent prostate carcinoma in a transsexual patient. *Clin Genitourin Cancer.* 2007;5(5):344–346.
 211. Thurston AV. Carcinoma of the prostate in a transsexual. *Br J Urol.* 1994;73(2):217.

212. van Harst EP, Newling DW, Gooren LJ, Asscheman H, Prenger DM. Metastatic prostatic carcinoma in a male-to-female transsexual. *BJU Int*. 1998;81:776.
213. Turo R, Jallad S, Prescott S, Cross WR. Metastatic prostate cancer in transsexual diagnosed after three decades of estrogen therapy. *Can Urol Assoc J*. 2013;7(7–8):E544–E546.
214. Miksad RA, Bubley G, Church P, Sanda M, Rofsky N, Kaplan I, Cooper A. Prostate cancer in a transgender woman 41 years after initiation of feminization. *JAMA*. 2006;296(19):2316–2317.
215. Moyer VA; U.S. Preventive Services Task Force. Screening for prostate cancer: U.S. Preventive Services Task Force recommendation statement. *Ann Intern Med*. 2012;157(2):120–134.
216. Futterweit W. Endocrine therapy of transsexualism and potential complications of long-term treatment. *Arch Sex Behav*. 1998;27(2):209–226.
217. Miller N, Bédard YC, Cooter NB, Shaul DL. Histological changes in the genital tract in transsexual women following androgen therapy. *Histopathology*. 1986;10(7):661–669.
218. O'Hanlan KA, Dibble SL, Young-Spint M. Total laparoscopic hysterectomy for female-to-male transsexuals. *Obstet Gynecol*. 2007;110(5):1096–1101.
219. Dizon DS, Tejada-Berges T, Koelliker S, Steinhoff M, Granai CO. Ovarian cancer associated with testosterone supplementation in a female-to-male transsexual patient. *Gynecol Obstet Invest*. 2006;62(4):226–228.
220. Hage JJ, Dekker JJML, Karim RB, Verheijen RHM, Bloemena E. Ovarian cancer in female-to-male transsexuals: report of two cases. *Gynecol Oncol*. 2000;76(3):413–415.
221. Mueller A, Gooren L. Hormone-related tumors in transsexuals receiving treatment with cross-sex hormones. *Eur J Endocrinol*. 2008;159(3):197–202.
222. Coleman E, Bockting W, Botzer M, Cohen-Kettenis P, DeCuypere G, Feldman J, Fraser L, Green J, Knudson G, Meyer WJ, Monstrey S, Adler RK, Brown GR, Devor AH, Ehrbar R, Ettner R, Eyley E, Garofalo R, Karasic DH, Lev AI, Mayer G, Meyer-Bahlburg H, Hall BP, Pfaefflin F, Rachlin K, Robinson B, Schechter LS, Tangpricha V, van Trotsenburg M, Vitale A, Winter S, Whittle S, Wylie KR, Zucker K. Standards of care for the health of transsexual, transgender, and gender-nonconforming people, version 7. *Int J Transgenderism*. 2012;13:165–232.
223. Colebunders B, D'Arpa S, Weijers S, Lumen N, Hoebeke P, Monstrey S. Female-to-male gender reassignment surgery. In: Ettner R, Monstrey S, Coleman E, eds. *Principles of Transgender Medicine and Surgery*. 2nd ed. New York, NY: Routledge Taylor & Francis Group; 2016:279–317.
224. Monstrey S, Hoebeke P, Dhont M, De Cuypere G, Rubens R, Moerman M, Hamdi M, Van Landuyt K, Blondeel P. Surgical therapy in transsexual patients: a multi-disciplinary approach. *Acta Chir Belg*. 2001;101(5):200–209.
225. Selvaggi G, Ceulemans P, De Cuypere G, VanLanduyt K, Blondeel P, Hamdi M, Bowman C, Monstrey S. Gender identity disorder: general overview and surgical treatment for vaginoplasty in male-to-female transsexuals. *Plast Reconstr Surg*. 2005;116(6):135e–145e.
226. Tugnet N, Goddard JC, Vickery RM, Khoosal D, Terry TR. Current management of male-to-female gender identity disorder in the UK. *Postgrad Med J*. 2007;83(984):638–642.
227. Horbach SER, Bouman M-B, Smit JM, Özer M, Buncamper ME, Mullender MG. Outcome of vaginoplasty in male-to-female transgenders: a systematic review of surgical techniques. *J Sex Med*. 2015;12(6):1499–1512.
228. Wroblewski P, Gustafsson J, Selvaggi G. Sex reassignment surgery for transsexuals. *Curr Opin Endocrinol Diabetes Obes*. 2013;20(6):570–574.
229. Morrison SD, Satterwhite T, Grant DW, Kirby J, Laub DR, Sr, VanMaasdam J. Long-term outcomes of rectosigmoid neocolporrhaphy in male-to-female gender reassignment surgery. *Plast Reconstr Surg*. 2015;136(2):386–394.
230. Dessy LA, Mazzocchi M, Corrias F, Ceccarelli S, Marchese C, Scuderi N. The use of cultured autologous oral epithelial cells for vaginoplasty in male-to-female transsexuals: a feasibility, safety, and advantageousness clinical pilot study. *Plast Reconstr Surg*. 2014;133(1):158–161.
231. Li FY, Xu YS, Zhou CD, Zhou Y, Li SK, Li Q. Long-term outcomes of vaginoplasty with autologous buccal micromucosa. *Obstet Gynecol*. 2014;123(5):951–956.
232. Kanhai RC. Sensate vagina pedicled-spot for male-to-female transsexuals: the experience in the first 50 patients. *Aesthetic Plast Surg*. 2016;40(2):284–287.
233. Straayer C. Transplants for transsexuals? Ambitions, concerns, ideology. Paper presented at: Trans*Studies: An International Transdisciplinary Conference on Gender, Embodiment, and Sexuality; 7–10 September 2016; University of Arizona, Tucson, AZ.
234. Bucci S, Mazzon G, Liguori G, Napoli R, Pavan N, Bormioli S, Olandini G, De Concilio B, Trombetta C. Neovaginal prolapse in male-to-female transsexuals: an 18-year-long experience. *Biomed Res Int*. 2014;2014:240761.
235. Raigosa M, Avvedimento S, Yoon TS, Cruz-Gimeno J, Rodriguez G, Fontdevila J. Male-to-female genital reassignment surgery: a retrospective review of surgical technique and complications in 60 patients. *J Sex Med*. 2015;12(8):1837–1845.
236. Green R. Sexual functioning in post-operative transsexuals: male-to-female and female-to-male. *Int J Impot Res*. 1998;10(Suppl 1):S22–S24.
237. Hess J, Rossi Neto R, Panic L, Rübhen H, Senf W. Satisfaction with male-to-female gender reassignment surgery. *Dtsch Arztebl Int*. 2014;111(47):795–801.
238. Nygren U, Nordenskjöld A, Arver S, Sodersten M. Effects on voice fundamental frequency and satisfaction with voice in trans men during testosterone treatment—a longitudinal study. *J Voice*. 2016;30(6):766.e23–766.e34.
239. Becking AG, Tuinzing DB, Hage JJ, Gooren LJG. Transgender feminization of the facial skeleton. *Clin Plast Surg*. 2007;34(3):557–564.
240. Giraldo F, Esteva I, Bergero T, Cano G, González C, Salinas P, Rivada E, Lara JS, Soriguer F; Andalusia Gender Team. Corona glans clitoroplasty and urethrapreputial vestibuloplasty in male-to-female transsexuals: the vulval aesthetic refinement by the Andalusia Gender Team. *Plast Reconstr Surg*. 2004;114(6):1543–1550.
241. Goddard JC, Vickery RM, Terry TR. Development of feminizing genitoplasty for gender dysphoria. *J Sex Med*. 2007;4(4 Pt 1):981–989.
242. Hage JJ, de Graaf FH, Bouman FG, Bloem JJAM. Sculpturing the glans in phalloplasty. *Plast Reconstr Surg*. 1993;92(1):157–161, discussion 162.
243. Thiagaraj D, Gunasegaram R, Loganath A, Peh KL, Kottegoda SR, Ratnam SS. Histopathology of the testes from male transsexuals on oestrogen therapy. *Ann Acad Med Singapore*. 1987;16(2):347–348.
244. Monstrey SJ, Ceulemans P, Hoebeke P. Sex reassignment surgery in the female-to-male transsexual. *Semin Plast Surg*. 2011;25(3):229–244.
245. Perovic SV, Djinic R, Bumbasirevic M, Djordjevic M, Vukovic P. Total phalloplasty using a musculocutaneous latissimus dorsi flap. *BJU Int*. 2007;100(4):899–905, discussion 905.
246. Vesely J, Hyza P, Ranno R, Cigna E, Monni N, Stupka I, Justan I, Dvorak Z, Novak P, Ranno S. New technique of total phalloplasty with reinnervated latissimus dorsi myocutaneous free flap in female-to-male transsexuals. *Ann Plast Surg*. 2007;58(5):544–550.
247. Ranno R, Vesely J, Hýza P, Stupka I, Justan I, Dvorák Z, Monni N, Novák P, Ranno S. Neo-phalloplasty with re-innervated latissimus dorsi free flap: a functional study of a novel technique. *Acta Chir Plast*. 2007;49(1):3–7.

248. Garcia MM, Christopher NA, De Luca F, Spilotros M, Ralph DJ. Overall satisfaction, sexual function, and the durability of neophallus dimensions following staged female to male genital gender confirming surgery: the Institute of Urology, London U.K. experience. *Transl Androl Urol.* 2014;3(2):156–162.
249. Chen H-C, Gedebo TM, Yazar S, Tang Y-B. Prefabrication of the free fibula osteocutaneous flap to create a functional human penis using a controlled fistula method. *J Reconstr Microsurg.* 2007;23(3):151–154.
250. Hoebeke PB, Decaestecker K, Beysens M, Opdenakker Y, Lumen N, Monstrey SM. Erectile implants in female-to-male transsexuals: our experience in 129 patients. *Eur Urol.* 2010;57(2):334–341.
251. Hage JJ. Metaidoioplasty: an alternative phalloplasty technique in transsexuals. *Plast Reconstr Surg.* 1996;97(1):161–167.
252. Cohanad S. Extensive metoidioplasty as a technique capable of creating a compatible analogue to a natural penis in female transsexuals. *Aesthetic Plast Surg.* 2016;40(1):130–138.
253. Selvaggi G, Hoebeke P, Ceulemans P, Hamdi M, Van Landuyt K, Blondeel P, De Cuypere G, Monstrey S. Scrotal reconstruction in female-to-male transsexuals: a novel scrotoplasty. *Plast Reconstr Surg.* 2009;123(6):1710–1718.
254. Bjerrome Ahlin H, Kölby L, Elander A, Selvaggi G. Improved results after implementation of the Ghent algorithm for subcutaneous mastectomy in female-to-male transsexuals. *J Plast Surg Hand Surg.* 2014;48(6):362–367.
255. Wolter A, Diedrichson J, Scholz T, Arens-Landwehr A, Liebau J. Sexual reassignment surgery in female-to-male transsexuals: an algorithm for subcutaneous mastectomy. *J Plast Reconstr Aesthet Surg.* 2015;68(2):184–191.
256. Richards C, Barrett J. The case for bilateral mastectomy and male chest contouring for the female-to-male transsexual. *Ann R Coll Surg Engl.* 2013;95(2):93–95.
257. Sutcliffe PA, Dixon S, Akehurst RL, Wilkinson A, Shippam A, White S, Richards R, Caddy CM. Evaluation of surgical procedures for sex reassignment: a systematic review. *J Plast Reconstr Aesthet Surg.* 2009;62(3):294–306, discussion 306–308.
258. Selvaggi G, Elander A. Penile reconstruction/formation. *Curr Opin Urol.* 2008;18(6):589–597.
259. Dhejne C, Lichtenstein P, Boman M, Johansson ALV, Långström N, Landén M. Long-term follow-up of transsexual persons undergoing sex reassignment surgery: cohort study in Sweden. *PLoS One.* 2011;6(2):e16885.
260. Kuhn A, Bodmer C, Stadlmayr W, Kuhn P, Mueller MD, Birkhäuser M. Quality of life 15 years after sex reassignment surgery for transsexualism. *Fertil Steril.* 2009;92(5):1685–1689.e3.
261. Papadopoulos NA, Lellé JD, Zavlin D, Herschbach P, Henrich G, Kovacs L, Ehrenberger B, Kluger AK, Machens HG, Schaff J. Quality of life and patient satisfaction following male-to-female sex reassignment surgery. *J Sex Med.* 2017;14(5):721–730.
262. Simonsen RK, Hald GM, Kristensen E, Giraldo A. Long-term follow-up of individuals undergoing sex-reassignment surgery: somatic morbidity and cause of death. *Sex Med.* 2016;4(1):e60–e68.
263. Djordjevic ML, Bizic MR, Duisin D, Bouman MB, Buncamper M. Reversal Surgery in regretful male-to-female transsexuals after sex reassignment surgery. *J Sex Med.* 2016;13(6):1000–1007.
264. Liberopoulos EN, Florentin M, Mikhailidis DP, Elisaf MS. Compliance with lipid-lowering therapy and its impact on cardiovascular morbidity and mortality. *Expert Opin Drug Saf.* 2008;7(6):717–725.
265. Forbes SS, Stephen WJ, Harper WL, Loeb M, Smith R, Christoffersen EP, McLean RF. Implementation of evidence-based practices for surgical site infection prophylaxis: results of a pre- and postintervention study. *J Am Coll Surg.* 2008;207(3):336–341.
266. Davis PJ, Spady D, de Gara C, Forgie SE. Practices and attitudes of surgeons toward the prevention of surgical site infections: a provincial survey in Alberta, Canada. *Infect Control Hosp Epidemiol.* 2008;29(12):1164–1166.